

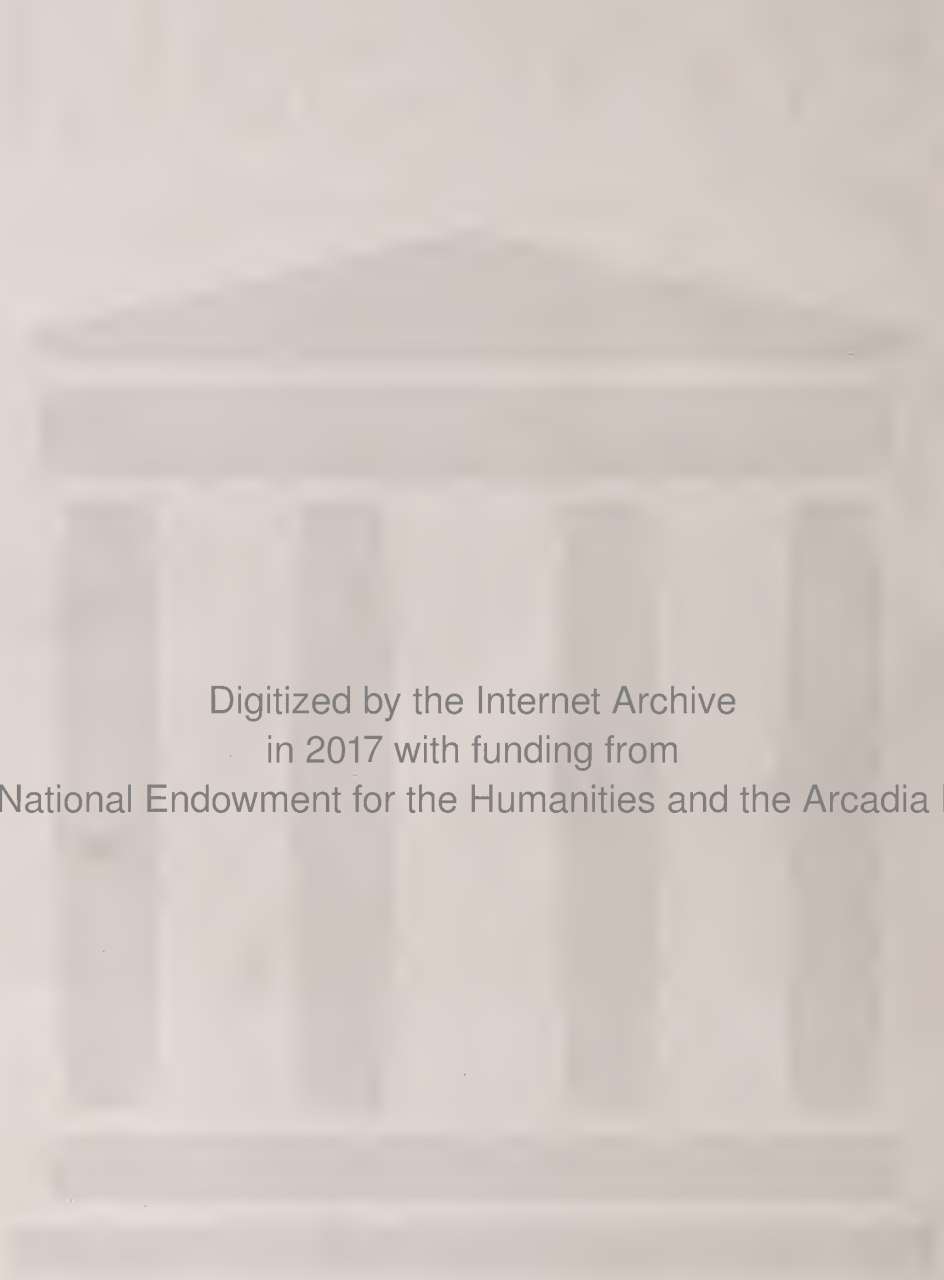
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Volume XIX

NASHVILLE, TENN., MAY, 1926

Number 1

A STUDY OF GALL-BLADDER DISEASE WITH SPECIAL REFERENCE TO POSTOPERATIVE MORTALITY AND MORBIDITY*

By MAURICE GELPI, M.D., F.A.C.S., New Orleans, La.

THE following observations are based on the study of the records of 476 consecutive gall-bladder operations performed by the entire surgical staff at the Charity Hospital in New Orleans. This was supplemented by 431 records from the Hotel Dieu staff, representing a total of over 900 gall-bladder operations performed in all the services of both institutions from 1914 to 1925. The analysis was undertaken by my two associates, Drs. Rateau and Davidson, and myself with the idea of improving the gall-bladder work in my service. Certain deductions were also drawn from a coincident study of seventy-three consecutive cases from this service appearing during part of the period covered.

As a result of our survey two main topics suggest themselves for discussion, namely, immediate postoperative mortality and persistent postoperative morbidity. Before entering upon these subjects, however, certain facts of considerable interest may be enumerated.

For instance, at Charity Hospital, almost exactly twice as many women as men were operated upon. There was practically the same proportion at Hotel Dieu. Of the

475 cases at Charity Hospital, 173 had stones and only twenty-six were recorded as having had typhoid fever. Probably more careful history-taking would have revealed a greater proportion of the latter. Ether alone or with nitrous oxide were the predominating anesthetics. Ethylene gas and splanchnic anesthesia were used in but a few instances during the period. Incidental appendectomy did not affect the mortality to any appreciable extent, as in 137 cases the mortality was only 11.67 per cent.

For the purpose of facility in handling, all operative procedures were classified in two groups, those in which the gall-bladder was removed and those in which the gall-bladder was left in.

At Charity Hospital, cholecystectomy was done 296 times, with a mortality of 16.21 per cent. Cholecystostomy was done 180 times with practically the same mortality, 16.11 per cent.

Of the seventy-eight cases classified as acute, twenty died, making a mortality of over twenty-five per cent for acute cases.

In 398 chronic cases, irrespective of the type of operation performed, fifty-seven died, making a mortality of 14.32 per cent for chronic cholecystitis.

Of the total cases reported at Charity Hospital, seventy-seven died. So that, in-

*Oration in Surgery, delivered before the Tennessee State Medical Association, Memphis, May 11, 12, 13, 1926.

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cluding cases of all types, whether simple drainage was done or whether the gall-bladder was removed, we have a gross post-operative mortality of no less than 16.17 per cent. This revelation was rather shocking, particularly in view of the fact that in all probability the heads of all services were under the impression that their post-operative mortality was reasonably low. Nevertheless, the fact remains and should serve as an object lesson not to rely upon individual impressions for gauging post-operative results. There are, however, certain conditions prevailing at Charity Hospital which would tend to explain this high mortality.

One of the conditions referred to, which stands out as an important element for consideration, is the fact that while the head of the service is technically responsible for all deaths in his service, all operations are by no means performed by him alone. Since the assistants are graded according to length of service, and therefore according to experience, the personal equation must figure very prominently in the production of the mortality. Not that this is by any means the only factor. For example, every large charitable institution is always a clearing house for advanced pathology, and this also inevitably plays a part in increasing mortality. A number of the cases also could have been appropriately grouped in the class of acute abdominal emergencies, which are always accompanied by a high mortality. This is true, for example, of the cases of rupture or gangrene of the gall-bladder with diffuse peritonitis at the time of operation. So that without considering anything else, the realization of these facts alone tends to minimize considerably the rather disconcerting figures. Although by no means entirely satisfactory either, individual study of the smaller group of cases, from the service in which we are particularly interested, revealed results in some respects considerably less humiliating.

In the series of seventy-three consecutive cases from service, nine occurring during

part of the period covered, the mortality for cholecystectomy was 5.45 per cent as against 16.21 per cent in the larger series. On the other hand, however, though cholecystostomy was done only eighteen times, the mortality was over 27 per cent. This can possibly be accounted for by the fact that only acute cases are drained in the service, hence these cases represent the worst operative risks encountered.

In the cases classified as acute, the mortality was 12.5 per cent as against 16.38 per cent in the larger series. In chronic cases the mortality was 10.52 per cent as against 14.32 per cent. The gross mortality for all cases, irrespective of the type of operation, was 10.95 per cent as compared with 16.17 per cent in the larger series.

At Hotel Dieu, a private institution, for the same ten-year period covered at Charity Hospital, there were found 431 cases, with a gross mortality of 12.06 per cent. The total gross mortality for the 900 cases studied was 14.22 per cent. So that the cause of death naturally suggests itself for scrutiny.

Various conditions are assigned as the cause of death, chief among which are surgical shock, postoperative hemorrhage, sepsis, myocarditis, diffuse peritonitis and acute nephritis. Of these conditions, certainly postoperative hemorrhage and diffuse peritonitis can be classed as almost preventable. In studying the individual deaths, one is struck by the fact that a number of cases were the victim of too much operation. One of these cases had a cholecystectomy and coincidentally excision of a urethral carbuncle, anterior colporrhaphy, amputation of the cervix, perineorrhaphy, oophorectomy and appendectomy. This patient was said to have died of shock. This brings up the question to what might be done to diminish postoperative mortality.

Closer attention to preoperative study and preparation suggest themselves for serious consideration, particularly in the cases with evidence of common duct ob-

struction. Every means offered by clinical, observatory and laboratory investigation should be utilized in order to estimate the individual's capacity to withstand operative shock and disturbance of liver function. This includes the determination of the CO₂ combining power, coagulation and bleeding time as well as the exercise of judgment in selection of the operative procedure. In addition to this, every effort should be made to increase resistance to the maximum point. This is important to the extent of even justifying at times a two-stage operation. This point was well brought out by Haggard at Monroe recently in stressing the value of preliminary drainage in cases of jaundice with common duct stone. Careful discrimination in selection of the most promising operative procedure for the individual case, calls for the exercise of surgical judgment, and is undoubtedly an important element in determining mortality. Definite improvement might be expected from the development of greater technical skill, although this phase of the work is already well established. Danna calls attention to the importance of delicacy in the handling of tissues and the avoidance of unnecessary irritation of the splanchnics.

In this connection too much stress cannot be laid on the importance of operating by sight and not by touch alone. This means the making of a liberal incision. The suggestion of Crile to avoid undue chilling of the liver and other viscera and to make provision for retaining the body heat, both during and after operation, gives food for thought. In the cases where drainage is considered compulsory as a primary procedure, postoperative adhesions from bile leakage might be avoided by the use of a supplementary, tubular, soft, rubber-tissue drain, incorporating within itself not only the gall-bladder drain but the joint between the drain and the gall-bladder, as well as the fundus of the gall-bladder itself.

The cases of drainage that do well are those where the drainage is prolonged. This

means inevitable necrosis and leakage at the point where the tube is fixed to the gall-bladder and consequent diffusion of bile with formation of adhesions. This leakage is caught by the supplementary tubular drain. It might be stated that this method has been in use for some time, but not long enough to prove its efficiency at re-operation.

Finally, more careful thought to the selection and administration of the anesthetic might prove of inestimable value, particularly in institutions where all the anesthesiologists are not experts. Under these circumstances especially more frequent selection might possibly be made of splanchnic anesthesia. Your attention is next called to the problem of postoperative morbidity in gall-bladder disease.

While the records of this series of cases does not furnish us complete, accurate data as to the ultimate results obtained by operation, certain deductions may be drawn from the available material. It is generally conceded that a very considerable number of cases operated upon for gall-bladder disease are not permanently and completely relieved of symptoms. What is the explanation of this? The answer lies in a study of the complications of gall-bladder disease more or less directly referable to the biliary tract especially. Of the total number of cases operated upon in the Charity Hospital series, no less than sixty-nine, or nearly fifteen per cent, were left with a permanent pathological residue beyond the reach of surgery. So that while it might have been perfectly justifiable to drain or remove the diseased gall-bladder, in either instance a limited operation was performed for a ramifying, complicated and intangible pathology. In other words, the simple drainage or removal of the gall-bladder alone cannot be expected to give permanent relief of all digestive symptoms when there are still remaining such pathological abnormalities as extensive adhesions involving the stomach, liver, and colon; cirrhosis of the liver; extensive cholangitis of long standing with or with-

out common duct obstruction; chronic pancreatitis and similar conditions representing more or less permanent damage not amenable to surgical intervention. Analysis of the biliary complications in the group of cases studied bears this out very strikingly.

Furthermore, in this study there were found no less than thirty per cent of cases with other gross pathological entities not connected with the biliary tract, yet capable in themselves of producing serious symptoms. As examples of this might be mentioned extensive adhesions, tuberculosis, uterine myomata, malaria, intestinal parasites, active syphilis, chronic nephritis, colitis, and a long list of others. So that from this series at least, almost fifty per cent would be expected to continue to be sick, at least to a certain degree, in spite of the gall-bladder operation.

What is the lesson to be drawn from these observations? When the direct, complete eradication of the pathology is admittedly beyond the reach of surgery, we are compelled to give serious consideration to prophylaxis. Prevention then of the permanent pathological damage should command our attention. One practical way of putting this idea into execution lies in a vigorous opposition to prolonged delay in operating, not only for gall-bladder disease but also for appendicitis. The early removal of the primary infectious focus, before the onset of cirrhosis or extensive biliary damage, is the only means of cutting down this fifteen per cent that we know cannot be cured after this permanent damage has taken place. This is not a plea for indiscriminate operation for

pseudo-appendicitis or half-studied cases of gall-bladder disease. Reference is made only to cases properly observed in which the diagnosis is unquestionable. In the other type of cases with independent pathology already referred to, attention, of course, should be focused directly on the intercurrent condition before promising the patient complete relief. A clear-cut understanding with the patient as to just how much is to be expected from each surgical procedure will prove of value.

To summarize then the salient points of this study, the following should be quoted:

1. According to the records of the 900 cases analyzed, the postoperative mortality in gall-bladder disease is too high, in spite of certain extenuating conditions.
2. This high mortality is certainly amenable to improvement, by closer attention to preoperative study, operative and postoperative care and anesthesia.
3. Incidental appendectomy does not affect mortality to any appreciable degree.
4. In certain cases, where there remains extensive permanent damage in the biliary tract even after operation, no complete, lasting results should be expected.
5. It should not be overlooked that many cases have coincident pathological conditions independent of the biliary tract yet fully capable in themselves of producing symptoms, in spite of the gall-bladder operation.
6. To prevent permanent, irremediable damage in the biliary tract, operations should not be too long delayed and early removal of intra-abdominal septic foci should be practiced.

SCARLET FEVER, PREVENTION AND TREATMENT*

MILTON SMITH LEWIS, M.D., Nashville

DURING the past few years rapid advances have been made in the elucidation of the etiology of scarlet fever, so today it is possible to state that a certain strain of hemolytic streptococcus is the offending organism.

The exact knowledge of the cause, prevention and treatment of scarlet fever began with the discovery of the Dicks that this disease could be produced in volunteers by inoculation with pure cultures of hemolytic streptococci isolated from cases of scarlet fever. Since the hemolytic streptococci are found in the throats of scarlet fever patients, and are seldom found in the blood stream of uncomplicated cases, it was evident that the rash was not produced by the direct action of the hemolytic streptococci on the skin. This suggested to the Dicks that the hemolytic streptococci growing in the throats produces some substance which, in turn, is responsible for the rash. If this substance or toxin could be found they were certain that it could be used in skin tests for determining the susceptibility to scarlet fever.

They used the filtrate from cultures and found that intradermal injections were followed by an inflammatory reaction. Furthermore, this reaction occurred more frequently in persons who gave no history of scarlet fever than in those who were convalescing.

The results obtained thus far had indicated that the reaction following intradermal injection of this filtrate furnished a means of determining immunity to scarlet fever.

The discovery of this specific toxin offered a scientific foundation for:

(1) The recognition of scarlet fever streptococci.

(2) The development of a skin test for susceptibility.

(3) Preventive immunization, and

(4) A specific antitoxin for therapeutic use.

Technic of the Dick Test: Dilute solutions of the toxin are employed, so that 0.1 cc. represents a skin dose. This exact dose is injected intradermally on the flexor surface of the forearm at the junction of the upper and middle third. A distinct wheal must form at the site of the injection, if not the injection must be repeated. The reaction is read not earlier than eighteen hours and not later than twenty-four hours after the test is made. An area of reddening one centimeter in diameter or over constitutes a positive reaction. An area of reddening less than one centimeter or no reddening at all is a negative reaction. To make the reading of the Dick test more accurate and to avoid the confusion that is likely to arise in the interpretation between positive and pseudoreactions, the Dicks strongly recommend a control test with toxin that has been heated. The heated toxin is injected in the same manner just below the unheated toxin, or if one so desires, on the opposite arm. Park and Zingher have recently stated that the use of the control is rarely necessary.

It must be remembered that the toxin of scarlet fever causes less inflammation in the skin test than the diphtheria toxin employed in the Schick test. So one who is familiar with the Schick test frequently interprets a positive reaction with the scarlet fever toxin as negative.

Reactions to scarlet fever toxin are transient. It is necessary to observe them not later than twenty-four hours after the tests are made. In partially immune persons, the reaction frequently begins to fade soon after it appears. If it is entirely

*Read before the Middle Tennessee Medical Society, Springfield, May 20, 21, 1926.

faded at the end of twenty-four hours, it is negative. A positive reaction often disappears within thirty-six hours.

This reaction, then, which follows the injection of scarlet fever toxin, appears to be an indication of susceptibility, and its absence an indication of immunity to scarlet fever.

We all know from experience how difficult it is to diagnose the mild or so-called missed cases of scarlet fever. The rash, the most conspicuous manifestation, and the one which has given the disease its name, is not in itself sufficient. In fact, there is no one symptom that is pathognomonic of the disease. It is then obvious that a diagnosis must be made upon an association of symptoms and the consideration of scarlet fever in all of its aspects. From the reports in the literature and from personal observations it appears that the Dick test may serve as an aid in the early diagnosis of scarlet fever. Early a positive reaction is an additional proof of the disease being scarlet fever, while a negative reaction is against scarlet fever; late positive reactions are against the diagnosis of scarlet fever, provided sufficient time has elapsed for the development of immunity.

Scarlet fever, like most infectious diseases, occurs more frequently during the school age than it does in infancy. Under one year it is relatively rare. It is known that at least ninety per cent of the cases occur before the tenth year of life and that most of the deaths are in children under six years of age. Among those who live, the complications may be damaging to health and usefulness. Chronic nephritis, chronic valvular disease of the heart, deafness, eye infections and arthritis all may follow in which treatment has been overzealous and injudicious. Not only is the life span shortened by these conditions, but the economic value of the individual is reduced by the lessening of his producing power and the expenses incident to long continued treatment.

Under present conditions the treatment

and isolation of scarlet fever result in heavy community losses. The patient must stay in bed for approximately one month in order to prevent the acute nephritis, which exists in practically all cases, from becoming chronic. The patient, usually a child, is just at the basic period of his education, is kept away from school and must either continue in his class under a handicap or lose a year of his school life. Under a system of quarantine which does not recognize the fact that immune persons rarely spread scarlet fever, other children in the family may also have their schooling interfered with. All of these facts demonstrate the seriousness of scarlet fever upon the public health.

The question of prevention of diseases is attracting increasing interest every year, but in no department of medicine is it more important than in the infectious diseases of early life. If means can be found for protecting these small children from scarlet fever, even if only until they are old enough to have a fair chance to combat it, the mortality will be greatly reduced.

The control of scarlet fever is not on a very satisfactory basis. Until now our chief reliance has been isolation. To quarantine other members of the family is not wholly justifiable now that we are in possession of a method whereby we can differentiate accurately between immunes and non-immunes. To interfere with the schooling of an immune child because of a case of scarlet fever in his home is not justified. By means of the Dick test, it is possible to determine the non-immunes and to immunize them against scarlet fever. If every non-immune child was so protected scarlet fever would become extinct. There still would be the carrier to deal with, but with an immune population he could do no harm.

PREVENTIVE IMMUNIZATION WITH SCARLET FEVER TOXIN

Extensive clinical trial has furnished ample evidence that active immunization with scarlet fever toxin is a practical procedure.

Persons who show negative skin tests do not require immunization, but persons who show a positive test should be immunized against scarlet fever. All persons with slightly positive reactions may have sufficient immunity to protect them from an attack of scarlet fever that would be recognized clinically, but they may develop a mild attack that is not recognized clinically, so from a public health point of view it is most important to completely immunize persons with slightly positive skin test.

The method of immunization against scarlet fever recommended by the scarlet fever committee requires five doses of 500, 1,500, 5,000, 15,000 and 20,000 skin test doses of toxin as a minimum, with an interval of one week between doses. It is recommended that the administration of the toxin be continued to the point of a negative skin test, but this is hardly necessary, for it has been shown that over ninety-five per cent of the individuals who have received the above skin test doses, showed negative skin reactions.

No bad effects have been observed from properly graduated immunizing doses. There is nearly always some reddening and local reaction which appears within a few hours after injection, but this soon subsides in from eighteen to forty-eight hours. General reactions are uncommon, and consist usually of some general malaise. Transient scarlatinal rashes may follow the first dose in highly susceptible persons. These reactions seldom follow any but the first dose. None of these reactions are as severe as those that sometimes occur during the course of immunization to typhoid fever.

Prevention of scarlet fever, after exposure, is more complicated. In case of definite exposure, skin tests are made as soon as possible, and if the skin test is negative, nothing more is done. In those with positive skin tests passive immunization is accomplished by injection of two and a half cubic centimeters of antitoxin. Such prophylactic use of the antitoxin should be followed in two to three weeks by active

immunization, for passive immunity is transient.

During the past few months I have performed 281 skin tests; 112 were positive, 169 were negative, fifteen were pseudonegative and ten combined positive. Sixty-four of the above tests were done on children in an orphan home where we had an epidemic of scarlet fever; twenty-two of these children had a definite positive reaction, forty-two gave a negative reaction. All of the children in the institution having been definitely exposed at some time, it was decided to immunize only the positive ones. This was done by injecting four doses of one cc. each at weekly intervals. Only one of these developed scarlet fever and that was in a child six years of age who had a markedly positive skin reaction previously. None of the other forty-two with a negative skin test have developed scarlet fever.

The one objection that occurs to me in immunizing patients against scarlet fever is the requirement by the scarlet fever committee of five injections of toxin in addition to a diagnostic test before and after immunization. This is a serious drawback from a public health point of view. People are accustomed to three injections in typhoid and diphtheria immunization, and if scarlet fever immunization could be accomplished in this number it would be of great advantage. It is hoped that within the near future that a proper dosage of three injections will be on the market, in which as great or greater immunity will be produced, as with the present five injections of toxin.

Fortunately during the last few years throughout the country scarlet fever has been mild. Not many lives will actually be saved by any serum, but because complications may occur so early in the disease, and the damage done is to be estimated not so much in the number of deaths as in the after effects, the importance of preventive immunization is apparent.

TREATMENT OF SCARLET FEVER WITH ANTITOXIN

The results of the administration of concentrated antitoxin in the treatment of scarlet fever in the last few years has been found to be clinically a success. The dosage was determined by much the same principle that governs the dosage of diphtheria antitoxin. A sufficient dose should be given at the earliest possible moment. An amount should be given in the first dose to make and keep the fluids of the body antitoxic. If, however, the temperature rises after the initial drop, a second dose should be given. The size of the dose is influenced by the severity of the case, as in diphtheria. Whether a late case in which there is still a marked rash should be treated with larger doses than an early case of equal severity is still a matter for further investigation.

Intravenous injection gives the most striking results. The fluids of the body, of course, becomes more quickly antitoxic, as shown by the Dick test. The results from sufficiently large intramuscular injections are certain, but they develop more slowly. The intravenous injection should be reserved for more toxic cases.

The results as noted at the bedside in the majority of cases are very striking. The higher the temperature and the more toxic the case the more striking will be the results if the serum is given very early in the disease. After an injection in an early uncomplicated case, the patient, as a rule, finds within a few hours that the throat is less sore, the mind clears, vomiting ceases, the appetite returns and the temperature and pulse begin to fall. Within from six to eight hours a delirious and very sick patient is often convalescent. With insufficient dosage there is less rapid improvement, and the toxic symptoms may return.

The following cases show favorable results after intramuscular injections of ten cubic centimeters of concentrated scarlet fever antitoxin:

REPORT OF CASES

Case 1. A boy, aged five, was sick two

days with headache and vomiting. On the second day he complained of a definite angina. On examination his throat was markedly inflamed. At this time his temperature was 103.5, pulse 130, respiration 36. Rash marked. In a few hours he was given ten cc. of antitoxin intramuscularly. The next day, about twenty-four hours later, the rash had almost disappeared, the temperature was 99, pulse 100. The first thing he greeted me with was, "Doctor, you won't have to paint my throat this morning, for I feel so much better." In other words he felt so much better that he thought he was well. On the second day after the administration of the antitoxin the rash had completely disappeared and his temperature never went higher than 99. The patient made a complete recovery.

This case shows very clearly the specific effect of the antitoxin.

Case 2. A girl ten years of age, who when first seen had a sore throat with a positive culture for streptococci hemolyticus. A definite rash over the abdomen, back and between both thighs. The temperature was 102, pulse 120, respiration 30. Patient was only moderately toxic and complained of aching all over. This case was considered rather mild, so it was thought best not to give any antitoxin, but wait until the next day and see what would happen. Next day the temperature was still 102 and patient feeling miserable, with slight increase in the rash, so it was decided to give her 10 cc. of antitoxin, and in twelve hours the temperature had fallen to 99.5 and she felt much relieved. The temperature never went over 100 during the next few days, but on the tenth day she developed a frontal sinusitis of a mild degree which was eventually relieved and was up and around when last heard from.

Case 3. A girl seven years of age. Complained of a sore throat and headache when first seen. No rash at this time visible. The next day when seen she had a distinct rash over upper chest, back and on inner surface of arms and thighs. She was im-

mediately given 10 cc. of antitoxin intramuscularly. At this time her temperature was 103.5, pulse 130. She complained of feeling achy all over. The next day her temperature had fallen to normal, but towards evening of the same day her temperature had gone up to 100. At this time she felt fine except that she felt some "lumps" in her throat. On examination the cervical glands at the angle of the jaw were swollen and tender. The rash had definitely faded. Under the circumstances it was decided not to give her any more antitoxin, as she felt good and complained only of the cervical adenitis. Under local treatment this cleared up completely in three or four days and temperature was normal at the end of seven days. During this time she ran a slight trace of albumen, but at the end of ten days the urine completely cleared up.

THE EFFECT OF ANTITOXIN ON THE COMPLICATIONS OF SCARLET FEVER

Antitoxin has little effect on complications, such as cervical adenitis, middle ear, nephritis, or in the endocardium, when they have already developed, but before they have developed the antitoxin appears to be of service in preventing their occurrence or if they do develop they are of a much milder type. One effect of removing the toxic element of the disease by means of antitoxin is to unmask such complications as already exist, making their recognition and proper treatment more certain.

Following the use of antitoxin in the treatment of scarlet fever, the same general care of the patient should be exercised as before, being especially on the lookout for complications. The ears particularly should be examined daily, and if there is any evidence of pus collection behind the drum it should be immediately opened. The kidneys should be carefully watched by frequent urinalyses, observing as far as possible if sufficient quantity is eliminated in twenty-four hours.

During the past two years I have treated twenty-six cases of scarlet fever with antitoxin. All of them received antitoxin on

or before the third day. Of these cases eleven were considered moderately severe, fifteen were mild. All of these cases were promptly relieved of the specific scarlet fever toxemia following the administration of the antitoxin. Especially in regard to their fall in temperature, pulse rate and definite fading of the rash. Almost all of them volunteered the information that they felt particularly improved in twelve to twenty-four hours after the injection of the antitoxin. This is strikingly similar to the changes so familiar in the treatment of diphtheria with the corresponding antitoxin.

CONCLUSIONS

1. The Dick test is a reliable means of determining susceptibility or immunity to scarlet fever.

2. The Dick test is also frequently of definite value in the diagnosis of scarlet fever.

3. That it is possible actively to immunize susceptibles for a considerable time.

4. There is ample evidence that the antitoxin now being used for the treatment of scarlet fever possesses true antitoxic properties in effective concentrations.

5. The early use of sufficient amounts of antitoxin apparently reduces the incidence of complications of severe degree.

6. A single large dose of antitoxin will probably prove more satisfactory, from every standpoint, than a small dose with the possibility of repetition.

7. The intramuscular injection appears to be satisfactory in practically all cases. The intravenous possibly being indicated in critical conditions.

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NOVASUROL AS A DIURETIC—WITH REPORT OF CASES*

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NOVASUROL is the double salt of sodium mercurichlorophenyl oxyacetate and diethyl barbituric acid and contains 33.9 per cent mercury. It was originally introduced by Zieler as an anti-syphilitic and was found to have a powerful diuretic effect, which at the present time constitutes its principal use.

Since early in the nineteenth century mercury compounds have been recommended as diuretics, but in the past have failed of general application owing to their ineffectiveness and at times their toxic effects if used in any amount. Novasurol's chief advantage over metallic mercury is that it is soluble in water, and as a result may be administered intramuscularly or intravenously and in sufficient amounts to at times, at any rate, produce a definite diuresis with seldom, if ever, any real toxic effects. It has been largely used in the management of the edema of cardiac disease, the relief of the ascites of cirrhosis of the liver and other conditions of portal obstruction, and to a less degree in relieving the edema incident to renal involvement, though, in general, nephritis has been considered as a contraindication, if present to any marked degree. The mechanism of the diuresis produced (1), according to De Mello Campos, is that the drug seems to have the power of unlocking the tissues in dropsy and thus allows the passage of the excess of water into the blood, producing a preliminary hydremia which precedes the diuresis. The drug is administered intramuscularly or intravenously in dosage of one-half cc. once or twice a week, though it is always advisable to give an initial test dose of one-half cc. to determine the tolerance to mercury of the individual in question. Diuresis,

when produced, usually appears quite promptly, beginning in from one to six hours, reaching its crest within twenty-four hours and then continuing, though to a less degree, for from one to several days more. From a review of the literature the best results seem to be those of the Mayo Clinic, where Roundtree, Keith and Barrier have administered to their patients concomitantly with the novasurol large doses of ammonium chloride—from 120 to 150 grains a day—and have restricted the diet as far as its salt and fluid content are concerned, allowing only from 800 to 1,200 cc. of total fluids a day. No untoward reactions from its use have been reported in the literature other than slight chilliness in a few instances. However, in two of the eight cardiac cases to be later reported in this paper, two unusual findings were observed, i. e., (1) in one patient coincident with the diuresis induced there developed a rather free diarrhoea for a few hours on each occasion of novasurol administration, and (2) in another patient where the nurse through a misunderstanding gave the novasurol subcutaneously instead of intramuscularly as ordered, there developed a slough the size of a dollar involving the skin and subcutaneous tissue at the site of injection. Should at any time the symptoms of mercurialism develop during novasurol administration we have felt that it could be quite promptly controlled by the oral and intravenous administration of sodium thiosulphate, though fortunately in our cases we have not observed any sign nor symptoms of mercurial inoxidation.

Saxyl and Helig first demonstrated the diuretic action of novasurol in cases of cardiac decomposition with edema and since then it has had a wide range of use in this condition, especially in Europe, where excellent results have been reported

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by Wenckebacke and others. It has since been shown in both normal and abnormal individuals that its use is followed not only by a considerable diuresis in many cases, but also by a relative and absolute increase in the urinary chlorides and sodium.

In this country Roundtree, Keith and Barrier (2), of the Mayo Clinic, have done considerable work with novasurol and ammonium chloride as diuretics in nephritis with edema and the ascites of hepatic disease. In ten out of twelve cases of nephritis, with extensive and in most instances long standing edema, they report striking diuretic effects from the combined use of novasurol, ammonium chloride and a diet with restricted salt and fluid intake. The results in this series were much better than in control cases treated by any one of the three principles alone, i. e., novasurol, ammonium chloride or low salt diet with fluid restriction to from 800 to 1,400 cc. In only one case of the twelve reported was any ill effect of the treatment noted and in this case there developed a threatened acidosis due to the diminished normal alkaline reserve in the blood and tissues from the amount of ammonium chloride taken. Novasurol was given in this series in dosage of one-half cc. twice a week and the ammonium chloride in amounts of from five to sixteen grams daily for from three to sixteen days, the largest amount being 162 grams or 2,430 grains over a period of eighteen days.

According to the literature the results obtained with novasurol in cases of ascites and edema due to portal obstruction have been unsatisfactory, as evidenced by the reports of Brunn, Muhling, Hassinccamp and others. On the other hand Roundtree, Keith and Barrier (3) report diuresis in nineteen of twenty cases of ascites due to hepatic disease treated by the combined use of novasurol intramuscularly and intravenously, ammonium chloride by mouth, together with a controlled diet of fixed low fluid and low salt content. The twenty cases reported comprised ten of portal cirrhosis, two of portal cirrhosis and cardiac

decompensation combined, two of Banti's disease, two of syphilitic cirrhosis, two of metastatic malignancy of the liver, one of polyserositis and one of polycythemia. In all of these cases the ascites was marked and in most was the outstanding feature and complaint. As regards the duration of the relief obtained little can be said—some of the cases tending to recur and the reaccumulation being controlled by further administration of novasurol and ammonium chloride, while in other cases the ascites had shown no tendency to recur after several months' time. In all cases with the disappearance of the ascites the general health and strength were markedly improved and the abdominal collateral channels disappeared almost entirely, the patient approaching a condition near to normalcy for the time being at any rate. In summarizing their results Roundtree, Keith and Barrier state that "the results in this series indicate that ascites of hepatic disease, particularly that of cirrhosis, can usually be adequately controlled by medical measures."

During the past eight months in private work and on our service at the Nashville General Hospital we have had the opportunity to observe the effects of novasurol in eight cases of cardiac decompensation with general edema and in two cases of cirrhosis of the liver with extensive ascites. In both classes of cases the Mayo plan of management was followed, i. e., the administration of novasurol in doses of one cc. intramuscularly, combined with the oral administration of ammonium chloride in amounts of 100 to 120 grains a day and a modi-Karrell diet consisting of 900 cc. of milk and total restriction of fluids to 1,200 cc. per day. No untoward effects were observed in any case other than the two mentioned earlier in the paper. In the eight cardiac cases there was an unquestioned diuresis in three, a moderate diuresis in two, and no effect whatsoever in three. Most of the cases were on digitalis and had been for some time when the novasurol treatment was instituted, and in two cases had

been on a low salt and fluid intake for some days preceding the administration of the novasurol and ammonium chloride without any appreciable diminution in the edema. One of the three cases reported as showing unquestioned diuresis has had three separate admissions and on each admission has shown no appreciable improvement in her edema or ascites despite several days of preliminary rest, digitalis, purgation and diet, until novasurol was given, as outlined, when the edema rather promptly cleared up and remained so until her discharge. I realize quite well that the results obtained in some of these cases could possibly be accounted for in some measure by the continuation of rest, digitalis and time, but in the cases of unquestioned diuresis the results have come so promptly after the administration of the novasurol in patients, who in most instances have been at a standstill for several days or a week, that it is difficult not to at least attribute some of the effects obtained to the drug that was administered.

Of the two cases of ascites due to cirrhosis, both obtained excellent and prompt results from the treatment outlined, and I wish to report one of these in detail to illustrate the rather astonishing results that are at times obtained.

Case report: R. W., colored male, married. Admitted May 9, 1926.

C. C. Enormous swelling of the abdomen, edema of the feet and legs.

H. P. I. Abdomen began swelling about sixteen months ago and feet and legs have been swollen only since the abdomen reached its present size and tension. Has been tapped a number of times with temporary relief only to have abdominal swelling to recur in a short time. Was in the Nashville General Hospital in November, 1925, when he was given novasurol and ammonium chloride with disappearance of his ascites in twelve days' time. At this entry was given three doses of one cc. each of novasurol at intervals of three days each and in addition 120 grains of ammonium chloride daily. The hospital chart of his

first admission shows no record of his actual urinary output, change in weight or abdominal measurements, so that we have no accurate gauge of his response from day to day to treatment. Following his discharge in November, 1925, patient's abdomen remained flat for from six to eight weeks, and his mother states that he seemed much improved in every way during this period. About the latter part of January, 1926, his abdomen again began to swell and finally reached such size that he was tapped on the outside about the first of March, 1926, with removal of a large amount of fluid and considerable temporary relief. The fluid again reaccumulated and by May 9, 1926, the day of his readmission to the General Hospital, his abdomen had become enormously distended and his feet and legs so swollen that he could scarcely move about. He had lost strength and considerable flesh about his face, chest and upper extremities. He was quite short of breath but had no cough. Appetite was poor—the least food intake occasioning sense of fulness. Bowels were constipated. No nausea, vomiting nor hematemesis. No nocturia—in fact, passed only small amounts of urine. P. M. H. and F. H. not obtained, as patient is deaf and dumb and relatives who furnished facts of present history not obtained from chart of former admission were unable to give any definite facts.

P. E. Temperature 98, pulse 84, respiration 28, weight 189½, blood pressure 158.82. Negro male somewhat emaciated about the face, neck, arms and chest, but enormously swollen about the legs and abdomen. Head, nose and ears negative. Eyes react to light and accommodation, but to the former somewhat sluggishly; there is definite arcus senilis present. Teeth are all gone. The tongue and throat seem entirely negative. Thyroid not enlarged and there is no adenopathy. The lungs show no abnormality other than some impairment at the bases and a few moist rales in this location presumed to be due to the pressure from below of the enormously dis-

tended belly. No evidence of free fluid in the pleural cavities. Heart shows a PMI that is somewhat diffuse in the fourth left interspace almost to the anterior axillary line. Heart sounds are of fair quality, show an occasional extrasystole but no definite murmur. Abdomen is enormously swollen, being dull almost everywhere and showing a definite fluctuation wave. There is a definite Caput Medusa at the umbilicus and abdomen measures forty-four inches at the umbilical level. Lower extremities show marked edema. Scrotum is normal but the penis shows a definite hypospadias. Reflexes are present. Urine amber, 1010, acid, no albumen nor sugar and microscopically only an occasional cast. Blood—Hb 65 per cent, RBC 3800000, WBC 4000. Wassermann negative. NPN 35 mgm.

Patient was put on the following orders: Rest in bed, diet 900 cc. milk and 300 cc. water, measure and chart fluid intake and urine output, chart weight daily, novasurol one cc. at once and repeat every third day, ammonium chloride 120 grains daily with the following results:

May 9—Weight 189½. Circumference of abdomen 44 inches. Given one cc. novasurol at 2 p.m.

May 10—By 7 a.m. today had voided 4144 cc., diuresis beginning six hours after novasurol was given. Weight was 178 pounds and circumference was 42 inches.

May 11—By 7 a.m. today had voided in last twenty-four hours 4117 cc. and weight was 170 pounds and circumference of abdomen 39 inches.

May 12—By 7 a.m. today had voided in last twenty-four hours 4424 cc., weight was 164 pounds and abdominal circumference was 38 inches. Given one cc. novasurol. Edema of feet and legs entirely gone.

May 13—In last twenty-four hours voided 8500 cc. following novasurol, weight was 142 pounds and abdominal measurement was 36 inches. Abdomen much softer but still shows signs of considerable ascites.

May 14—In last twenty-four hours voided 8008 cc., weight was 135½ pounds and abdominal measurement was 33 inches.

May 15—In last twenty-four hours voided 7108 cc., weight was 124 pounds and abdominal measurement was 32 inches. Only a small amount of fluid remains in the abdomen. Was given another cc. of novasurol intramuscularly.

May 16—In last twenty-four hours voided 6700 cc., weight 118 pounds and abdominal measurement was 31 inches.

May 17—In last twenty-four hours voided 5000 cc., weight was 115 pounds and abdominal measurement was 29½ inches.

May 18—In last twenty-four hours voided 2870 cc., weight was 110 pounds and abdominal measurement 28½ inches.

May 19—In last twenty-four hours voided 3080 cc., weight is 106 pounds, abdominal measurement 28 inches. All signs of fluid have entirely disappeared.

To summarize, this patient received during ten days time three cc. of novasurol, 1200 grains of ammonium chloride and a total fluid intake of 12000 cc., or twelve quarts approximately. During this same period of time he voided 53,959 cc. of urine or approximately 50½ quarts, lost 83 pounds in weight as a result of the elimination of retained fluid from his tissues and belly cavity, and his abdominal measurement decreased from 44 inches to 28 inches. At no time has this patient shown any unfavorable reaction from the medication, the urine showing no abnormal findings as a result of the novasurol administered and the rather large amounts of ammonium chloride having no harmful effect on the digestive system. The patient's appetite is now excellent and he states that he feels better and stronger than he has for months. As to how long he will remain free of fluid this time, of course, is a question that only the future can answer.

In conclusion, to summarize our impressions of novasurol from the results obtained in the small series in which we have had the opportunity to observe its effects, it would seem that:

(1) Novasurol is a drug of sufficient potency to justify its maintaining a position in rational therapeutics.

(2) It is not a cure for any condition, but merely a valuable aid in the management of certain conditions in which edema and ascites are outstanding features, especially where these symptoms have not yielded to the ordinary measures directed against them and are of such grade as to have become one of the major sources of discomfort to the patient.

(3) Novasurol is not an infallible diuretic—at times it fails to produce the desired effect, just as do most other drugs used for a definite purpose.

(4) Its best effects seem to have been secured in the relief of the edema of cardiac decompensation and nephritis, and of the ascites of hepatic disease.

(5) The most striking results have been attained by the concomitant use of large doses of ammonium chloride by mouth and a diet restricted as to fluid and salt content.

(6) Finally, novasurol seems to be relatively a safe drug when administered as directed and in the amounts suggested.

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A PLEA FOR A MORE GENERAL USE OF LOCAL ANESTHETICS*

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WHAT a far cry it is from the pioneer work of Cronig, Reclus and Schleich, with their massive intradermal infiltration of dilute, cocain solutions, with a limited field and their ever-present danger of poisoning, to the modern synthetic compounds with which we can work for an hour or longer using as many grains as we desire, with no danger of any constitutional manifestations, and yet with complete anesthesia of the tissues (to quote from Dr. Matas). The synthetic chemist and pharmacologist have not been idle and their untiring and brilliant efforts to find substitutes for the dangerous and costly cocain have given us a succession of remarkable synthetic products, and in the biological laboratory have found in suprenin a less perishable substitute for adrenalin and has marked a new era in the history of local anesthesia by its powerful and lasting vasoconstrictor and ischemic action. It gives the operator a bloodless field. What should we expect of the ideal anesthetic?

1. It should be non-toxic.
2. It should produce a durable anesthetic.
3. It should cause as little local disturbance as possible.
4. It should be soluble in water, compatible with adrenalin and sterilizable by heat.

Today we have two synthetic compounds, both belonging to the Ester group, both having an amido base that stand far above all other anesthetics. I refer to novocain and apothesine. They differ in two essentials: Novocain is made with ethyl alcohol and benzoic acid, and apothesine from propyl alcohol and cinnamic acid, neither habit-forming or subject to the Harrison Narcotic Law. Apothesine is a little slower in diffusing through the tissues than novocain. I have been oftentimes asked about

the toxicity of apothesine. I have used as much as twelve grains at one sitting and have never seen any signs of toxicity. Just how much it is safe to use I do not know. To show how important the details of the technique are, I would refer to the fact that one of the masters of local anesthesia, Prof. Braun, gave it up for appendicitis because his results were not satisfactory. He tried to anethetize all layers of the abdominal wall before operation and failed.

We anethetize layer by layer and get complete anesthesia. A few cases of marginal necrosis of the wound following its use have been reported by various surgeons. I have had no similar experience, if the marginal necrosis is due to the drug, which I doubt. It may be due to faulty preparation of the solution or faulty sterilization or water logging your tissues, cutting off your blood supply too long. Of course, sometimes we get a marginal necrosis when no local anesthesia is used. Why should we use local anesthesia at all? First and foremost, to avoid the dangers to life of a general anesthetic. How great these dangers are in any given case, I do not know. Some apparently good risks take anesthesia very badly; other patients who seem bad risks, take it well. But that there is a risk to life in every general anesthetic used there can be no doubt. Statistics of anesthetics means very little. Statistics are lies in the shape of numbers. We must not forget the fact that a patient does not succumb during the first few days after an operation always means that the danger from the anesthetic is over. Who of us have not seen asperation pneumonia? How often does nephritis date from an operation? Did the operation cause the nephritis? No. But the ether did. How often have we seen paralytic illness following abdominal operations? Did the operation

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cause it or was it the ether. How often have we seen patients after abdominal operations vomit for days, then die exhausted? Did the operation cause the vomiting or was it the ether? In operating on peritonitis cases under a local anesthesia it is surprising how little the patient vomits, how little the abdomen is distended and how quickly they recuperate. In fact, I consider a peritonitis a distinct indication for the use of local anesthesia. When we consider that the system is already struggling to throw off a peritoneal infection and the organs of excretion are doing a large part of this defensive work, the danger of handicapping these organs still further by giving an anesthetic must be apparent, and if we can remove the offending appendix or other lesion in the presence of a peritonitis under local anesthesia, we are giving our patients a far better chance for a rapid recovery. Much of the postoperative morbidity, many of the complications and not a few deaths, should be called not postoperatives, but postanesthetic. But are there any inherent objections to operations under local anesthesia. Surely there are or all surgeons would be using it much more freely than they do. First is the fear of causing pain. With increasing experience, with proper technique and with careful selection of cases pain can

to a large extent be eliminated, and even if pain were not entirely eliminated in some cases, the lessened danger of the operation, the fewer postoperative complications, the wonderful difference in postoperative comfort would weigh heavily in favor of such procedure. I removed the appendix of a young married man one morning at Erlanger Hospital and the next morning his wife came in and found him reading the morning paper. She was astounded at the absence of all pain and discomfort. Her own appendix had been removed under ether and she assured me that her suffering from abdominal distention for forty-eight hours after the operation had been more severe than her labor pains. Most all patients who complain during the operation say later that they had very little pain, but that they were afraid. If the patient is given pituitrin in one cc. hypodermically on the day after operation, following with rectal irrigation will relieve most of the pain and discomfort. That is due to inhibition of peristalsis, caused not so much by the operation as by the anesthetic. If local anesthesia did nothing else than eliminate this, it would be well worth while. The patients greet you with a smile the next morning and usually express their surprise that they have so little pain and discomfort.

SURGICAL LESIONS OF THE ILEO-CECAL REGION OF SPECIAL INTEREST*

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OF all the pathological conditions in the abdomen, from a surgical viewpoint, there are few that call for more keen observation and diagnostic ability than lesions in the ileo-cecal region. Without enumerating the numerous conditions, I should like to present two for consideration that have appealed to me especially because of the fact that a correct preoperative diagnosis is seldom made.

Every surgeon undoubtedly, at some time or other, has operated on a patient for acute appendicitis, when the diagnosis was made by exclusion, and a surgical surprise encountered. If at the time of operation the supposedly acute appendix looks innocent, and not sufficiently diseased to account for the symptoms, it becomes necessary to look further, and occasionally the presence of enlarged glands in the mesentery of the lower ileum will reveal the source of the trouble. This condition, termed *tabes mesentericus*, and almost universally considered a tuberculous involvement of the glands, is the first subject for consideration.

PREVALENCE

Tuberculosis of the mesenteric glands is not uncommon and is more prevalent in children than in adults. Frankel, of Chicago, states that "all statistics show the rarity of intestinal tuberculosis in the first year of life, the frequency gradually increasing until the fourth or fifth years, then diminishing again." The theory has been advanced that the tuberculous infection is usually of the bovine type, and is due to the change from mother's milk to cow's milk. Walker, of London, found tuberculosis of the mesenteric glands in fifty-nine per cent of 254 necropsies on

tuberculous children; only forty-six cases were diagnosed clinically in 6,000 to 7,000 patients at the Evalina Hospital. The view is held by some that the mesenteric glands constitute the most common focus of tuberculous infection in that body, and that the glands are involved in practically every child in which an abdominal operation is necessary; the condition is found occasionally in young adults.

MODE OF INFECTION

Much speculation has arisen as to whether or not the mesenteric glands alone can be involved in a tuberculous process without a primary focus elsewhere, and many authorities concede this as a possibility. Lung involvement, of course, must be given some consideration, but often cannot be demonstrated. Hematogenous infection is not very likely. Perhaps the most plausible theory is one which maintains that the tuberculosis bacilli are ingested and tend to localize in the ileo-cecal region because of the stasis at this point. Thiemann believes that stasis favors the passage of the bacilli through the intact mucous membrane of the bowel into the lymph channels and adjacent glands without evidence of present or past ulceration of the mucosa, but this theory has not been proved. Extension from adjacent structures must be considered, but we know that the bowel itself is not commonly involved. Tuberculous salpingitis gives rise to peritonitis as a rule and not to a localized glandular involvement. It must be remembered that inflammatory processes are very common in the ileo-cecal region, and that this area is necessarily exposed to many organisms. We must not lose sight of the fact that these glands may be purely inflammatory in character, secondary to intestinal toxemias and to acute conditions so

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common in the appendix and neighboring structures. However, it is not unusual that an acutely inflamed appendix is removed when there is practically no associated enlargement of the mesenteric glands.

PATHOLOGY

A thorough and comprehensive description of the glandular involvement in tabes mesentericus has been presented by Rowden, of Leeds. Five stages are described and are mentioned briefly because they give an index to the type of operation indicated.

1. Stage of infection or simple adenitis.
2. Stage of spotted caseation in which yellow spots are seen in a red gland, the spotting sometimes extending to the overlying peritoneum.
3. Stage of spotted calcification in which there is actual irritation of the overlying peritoneum. Sometimes there is a certain amount of exudate.
4. Stage of massive caseation in which the glands may become as large as a tangerine. These masses may become pedunculated and detached, and may be found loose in the abdomen. They are usually sterile, but may contain tuberculosis bacilli.
5. Stage of massive calcification in which there is a greater tendency to cicatrize than in the caseous gland. Usually the gland is small, irregular and very hard, with a greatly reddened areola flaked by red masses of lymph. Much pain is encountered, as a rule, and obstruction is not uncommon, due to adhesions resulting from the suppuration.

Microscopically there is noted hyperplasia of the cellular elements as manifested in the nuclear division and increase in the number of cells. Not only the lymph elements but also the endothelial structures proliferate.

It is possible that tuberculous peritonitis may find its origin in the rupture or spread of the tuberculous process from such glands, which may at times perforate into a vein or into the thoracic duct.

TYPES OF DISEASE

A classification has been made by Braithwaite, which covers all the cases very satisfactorily and divides itself into two groups.

Group I. Children:

(a) *The Acute Type.* The patient is usually from two to ten years of age, and the disease resembles acute appendicitis. Violent abdominal pains come on suddenly with vomiting, rigidity and flexion of the thighs on the abdomen. There is tenderness throughout the abdomen, but it is usually more marked in the right lower quadrant. The pulse is rapid, the temperature high and the respirations are increased. It is supposed that the acutely inflamed gland may cause a rise of temperature, whereas an acutely inflamed appendix may not.

(b) *Subacute Type.* This type of disease usually occurs in patients between the ages of six and ten years. The glands are undergoing resolution and differ from those found at the onset of the disease. The symptoms are similar to those in the acute type, but are less marked. As a rule, there are repeated attacks of sudden abdominal pain, colicky in nature, coming on from two to three times a day to once every three or four months. The child cries out with pain, holds his belly, flexes the thighs on the abdomen, and may feel perfectly well again in ten minutes. Vomiting may be present and the temperature occasionally rises to 100 degrees. Deep palpation usually reveals a tender mass in the region of the appendix, and the diagnosis of appendicular colic or subacute appendicitis is made. Operation usually reveals a normal appendix.

Group II. Adults:

In the adult group the age of the patient is usually between fifteen and forty-five years. Aching pain in the right iliac fossa is common. Usually the subject is a thin, anemic, constipated, nervous woman. The pain may be dull and aching, or dragging and stabbing in character, with an occa-

sional interval of freedom. It may be increased by extending the leg and decreased by lying down. Often there is no constitutional disturbance and no fever. In case the glands are large enough to make pressure they may cause symptoms of other diseases, such as renal colic or other types of pain. Tenderness is usually localized to the area of pain. The white blood count ranges from 12,000 to 15,000.

NATURE OF PAIN

In cases of *tabes mesentericus* the pain may last from a few minutes to twenty-four hours and clear up suddenly. It may simulate practically any type of colic. In the complicated cases, such as those with obstruction following adhesions, there may be excruciating pain. Ordinarily it is not affected by movement, not referred, and is usually relieved by pressure and heat.

Several theories have been advanced in regard to the cause of the pain. It has been suggested that it is due to spasm of the small intestine and occasionally causes intussusception, while another suggestion is that it is due to the peristaltic waves exerting tension on the mesentery and causing a drag on the inflamed glands. It is likely that the inflammatory process of the glands is responsible, causing irritation of the overlying peritoneum.

DIAGNOSIS

There is considerable general constitutional disturbance, and fever usually starts the illness. Vomiting is present in a good many cases. The Von Pirquet test is usually negative and not of value. Considerable aid may be expected from x-ray examination by ruling out various types of calculi. If the glands lie close to the ureter there may be hematuria and the urologist can help by ruling out lesions of the genito-urinary tract.

Lead colic and parasitic infections must be considered, also there are numerous acute abdominal conditions that must be excluded, such as acute perforations, vascular, obstructive and inflammatory conditions.

If the glands are large enough to be pal-

pated the diagnosis is not so difficult. A tender area may be found over a calcified gland. Parker quotes Morland as follows: "In children, when a palpable tumor is present, the diagnosis is easier than in adults, for where in the latter there are many conditions giving rise to tumors simple and multiple within the abdomen, in the former there are but few indeed. It may be said that hard movable lumps in the belly of the child, which are not fecal, and remain constant under all conditions are almost certain to be tuberculous mesenteric glands."

Thiemann feels that even in adults a diagnosis may be made and states that multiple tumors in the region of the small intestine, if leukemia is ruled out, are almost pathognomonic. Whether or not palpable masses are found, inflamed mesenteric glands must be considered in acute conditions of the abdomen in children and young adults. In children the infection is usually less dangerous, because it is of the bovine type of tuberculosis.

MISTAKEN DIAGNOSES

As stated previously, a preoperative diagnosis of *tabes mesentericus* is rarely made. Many of the cases are operated on for intestinal obstruction, and acute and subacute appendicitis.

In a series of eight cases diagnosed acute appendicitis reported by Iselin, four were between the ages of four and ten, and four between seventeen and twenty-four; all recovered. Carson reported thirty-three surgical cases and advocates the removal of the diseased glands along with the appendix; twenty-two of his cases were quite well, eight practically well, two died without improvement, one was a recent case. A case reported by Parker demonstrates the fact that pain may be caused by the diseased glands. In a girl of nineteen a diagnosis of chronic appendicitis was made and the appendix removed. During the operation several small calcified glands were found in the mesentery of the lower ileum. The pain persisted and six months later the patient was again operated on; the

glands were removed with complete relief of the symptoms.

Moreau and Bogaert reported a case of a girl of nineteen and reported sixty-nine cases from the literature. Complete cures were reported in 94.5 per cent of the cases where the focus was excised.

In fifty-eight cases re-examined from six months to thirteen years after operation, the general health was excellent. Only two instances of recurrence were noted. In one complete cure followed the second operation; another died of tuberculous peritonitis several years later. The correct pre-operative diagnosis was not made in any case.

TREATMENT

It is almost a universal practice to remove the appendix, probably due to the relief it affords the surgeon's mind that in future attacks of pain the appendix will not be responsible. Some believe that the condition will clear up due to the operation and the temporary starvation which follows; others believe that cure will eventually take place regardless of surgical intervention. It has been advocated that the intestine and its affected mesentery should be resected, which seems an extremely radical procedure.

Braithwaite and Rowden have enumerated their methods of treatment, which seem rational and conservative. In young children, if the appendix is not badly diseased and non-tuberculous adenitis is found, the appendix alone should be removed. If a mass of caseous or calcified glands is found, remove the appendix only and resort to general treatment later. In the young, if one or two caseous or calcified glands are found, remove the glands and the appendix. Glands located near the mesenteric border should not be removed, because of the danger of the development of a fecal fistula. If there is an acute infection, it is best not to disturb the gland; local peritonitis offers no contraindication. Should clinical evidence indicate that the glands alone are involved, operation is not necessary, but conservation of the appendix always adds to the danger of the condition.

An adult with one or two calcified glands and local symptoms should have the glands removed, provided it can be done without interference with the circulation.

Practically everyone who has had any experience with this disease has reported great benefit from heliotherapy and physiotherapy. The entire body should be exposed, beginning with a very short treatment at first. Tuberculin has proved of very little benefit. Many of the cases are improved following the opening of the abdomen, as in cases of tuberculous peritonitis. This may be due possibly to admitting air, or perhaps to congestion of the abdominal wall following the operation. Temporary paralysis of the bowel and abdominal fixation may also be of value.

The mortality in operative cases has been less than 1.5 per cent.

DANGERS OF THE DISEASE

If the glands are not treated they may soften and perforate and cause mixed infection or generalized tuberculous peritonitis. Tuberculous meningitis may be a complication.

In the treatment with the heliotherapy and physiotherapy extreme care must be used, especially if the glands are soft, for they may rupture and cause a spread of the disease. For the hyperplastic type of gland this treatment is considered good.

We have been conservative in the treatment of our series of six cases and have not removed the glands in any case, except for diagnostic purposes.

SUMMARY

1. Tuberculosis of the mesenteric glands is not uncommon, especially in children, but is rarely diagnosed preoperatively.

2. Infection is frequently of the bovine type, and it is presumed that it gains entrance through the intact intestinal mucosa.

3. Various ages of infection are found, varying from a simple adenitis to massive caseation and calcification.

4. In children an acute and subacute type of the disease are encountered; adults are not immune.

5. Pain is usually severe, intermittent in character, not referred, and of short duration.

6. Diagnosis is difficult and must usually be made by exclusion; x-ray studies are of much value.

7. The treatment is usually surgical, including the removal of the appendix, unless a positive clinical diagnosis can be made.

8. Excellent results have been obtained from heliotherapy and physiotherapy.

This subject is presented not with the idea of bringing out anything new about the disease, but to emphasize the importance of considering lesions of the mesenteric glands, especially when the patient has a recurrence of the preoperative symptoms, after a supposedly diseased appendix has been removed.

CYSTOID APPENDICITIS

The second type of lesion I wish to discuss briefly is as interesting as *tabes mesentericus*, in that a correct preoperative diagnosis is not frequently made.

Time will permit only a resume of the interesting points in this disease, and the histories of two cases operated on within the past eighteen months. The specimen from the first case, herewith presented, is probably the second largest on record; the largest one reported was loosely described by Newman as being the size of a man's head. I shall mention only the positive findings in these cases.

Case I. W. D. L., 51, male.

Past History. Twenty-two years ago sudden epigastric colic requiring hypodermic for relief. Pain lasted three days, ended abruptly. Nausea and vomiting. Tender over appendix. Two years later urinary frequency; passed small stone, presumably from right side. Next sixteen years, some gas and bloating after meals. Four years ago discovered movable mass in right side, gradually increasing in size. Noticed weight and fulness but no pain. Constipated for years, worse past nine months.

Physical examination. Practically negative except for a large semi-solid movable mass in the right abdomen, measuring

roughly 6x8 inches, and palpable in the flank and anteriorly. No tenderness. Could not be definitely separated from lower pole of kidney.

Special examination. Cystoscopic examination and x-ray of kidneys, ureters and bladder, and upper gastro-intestinal tract was negative. A barium enema revealed a definite filling defect in the cecum and ascending colon, corresponding to the location of the tumor.

Preoperative diagnosis. (1) Chronic inflammatory mass with cystic degeneration secondary to old appendiceal abscess, fifty per cent; (2) solitary cyst lower pole right kidney, fifty per cent; (3) retroperitoneal lipoma or mesenteric cyst, twenty-five per cent.

Operation. At operation at the Baptist Memorial Hospital in October, 1924, under ethylene anesthesia, an appendectomy and partial resection of the cecum were performed. On opening the abdomen a large cystic mass measuring 7x6x5 inches bulged into the wound. It was semi-fluctuating, translucent, involved the entire cecum and was partially retroperitoneal. The appendix was found as a teat-like projection from the large tumor. Partial resection of the cecum was made without injuring the ileocecal junction. Abdomen closed without drainage; uneventful recovery; perfectly well since.

Pathological diagnosis. Mucous cyst of the appendix.

Case II. Mrs. K. V. M., age 34.

Past history. For several years symptoms of chronic appendicitis; lately weakness, exhaustion and loss of weight.

Physical examination. Negative except for tenderness over the appendix and a palpable smooth, semi-solid, non-tender, movable mass in right tubo-ovarian region.

Special examinations all negative.

Preoperative diagnosis. (1) Chronic appendicitis, ninety per cent; (2) right pelvic mass, probably ovarian cyst.

Operation. At operation at the Methodist Hospital in June, 1925, an appendectomy and partial resection of the cecum

were performed. The mass in the right tubo-ovarian region proved to be a mucous cyst of the appendix, measuring 4x2x2 inches.

Patient made uneventful recovery and is perfectly well.

COMMENT

The exact cause of mucous cysts of the appendix is not definitely known, but there apparently is a slow process of altered secretion of the mucosa secondary to a low grade chronic infection with stenosis at one or more points of the lumen. It usually occurs between the twentieth and fortieth years of life. The walls of the appendix are markedly thinned out, and the mucosa may be partially or completely absent. Occasionally diverticulae are present. The mucous content is gelatinoid in character. If perforation results we have the so-called pseudo-myxomatous type of peritonitis. In cystoid appendicitis the prognosis is good and there is no tendency to recurrence. This condition is often mistaken for colloid carcinoma. In the case of the pseudo-myxomatous degeneration of ovarian origin there is a tendency to recurrence and metastases.

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REPORT OF CASES.

Name, E. B.; sex, F.; age, 7.

Past History—Measles.

Present Illness—For two weeks colicky abdominal pain every day; awakens at night; mostly region of umbilicus; vomiting.

Physical Examination—Tenderness across entire lower abdomen; temperature, 99.2; WBC, 20,000; polys, 80 per cent; intestinal obstruction suspected.

Operation—Chronically inflamed appendix; mesentery of small intestine studded with large firm glands.

Results—No attacks; one year postoperative; violet ray and cod liver oil treatments; gained twelve pounds; apparently well.

Name, L. J. B.; sex, M.; age, 6.

Past History—Flu twice, malaria, otitis media, chicken pox.

Present Illness—Attacks generalized abdominal pain with tenderness two or three times a year for three years; vomiting with attacks; recent attack localized to R. C. M.; temperature 102.

Physical Examination—Undernourished; very tender over appendix; pulse 120; temperature 98.6; WBC 11,300; polys 71 per cent; urine negative.

Operation—Long, kinked, chronically inflamed appendix; many enlarged glands in mesentery of lower ileum; suggestive of TBC.

Results—One attack as before; one month postoperative; six months postoperative; gained two pounds with violet ray and cod liver oil; improving gradually.

Name, J. McD. H.; sex, M.; age, 8.

Past History—Measles, mumps, chicken pox, whooping cough.

Present Illness—For several years, three or four times a year, attacks, generalized abdominal pain, radiating to R. L. Q. with nausea and vomiting; constipated; temperature 101 degrees with attacks.

Physical Examination—Fairly well nourished; tonsils diseased; large firm cervical glands; tender and rigid over appendix; pulse 110; temperature 99 degrees; WBC 8,850.

Operation—Acute exacerbation of chronic retrocecal appendix; about 50 cc clear serous fluid in region of appendix; glands in mesentery of lower ileum large and firm.

Results—Several mild recurring attacks since operation seven months ago; gained ten pounds, having ultra violet treatment and cod liver oil now.

Name, Wm. J.; sex, M.; age, 7.

Past History—Negative.

Present Illness—Occasional mild epigastric cramps for three years; worse past three weeks; nausea and diarrhea with attacks.

Physical Examination—Anemic child; prominent abdomen, not tender; temperature 100 degrees; hemoglobin 90 per cent; WBC 8,850; tuberculous peritonitis suspected.

Operation—Mildly inflamed appendix; much free fluid in abdomen; intestines markedly distended with gas; mesenteric glands firm, some size of walnut.

Results—Several similar attacks first two months postoperative, with violet ray four months postoperative; had gained much weight; no evidence of fluid; apparently well.

Name, R. L. H.; sex, F.; age, 9.

Past History—Negative.

Present Illness—Occasional attack epigastric distress; colic past three days; hypo for relief; nausea and vomiting; no fever; constipated.

Physical Examination—Abdomen distended; no rigidity or tenderness.

Operation—Chronically inflamed appendix; lymph vessels markedly dilated; glands large and firm.

Results—No follow-up letter.

Name, L. J.; sex, F.; age, 20.

Past History—Negative.

Present Illness—Epigastric distress after meals for several years; some pain R. L. Q., back and hips at times; hurt back several years ago; strained sacroiliacs, wore jacket; pain severe over appendix, occasionally with nausea.

Physical Examination—Slender, anemic, nervous young woman; tender over appendix; temperature 99.2; WBC 10,100.

Operation—Chronic Appendix; small cyst left ovary; moderate enlargement of mesenteric lymph nodes; not caseous.

Results—Eighteen months postoperative; had several recurring attacks; gained six pounds; no light treatment.

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J. F. GALLAGHER, M.D. ----- Editor

R. C. DERIVAUX, M.D. ----- Associate Editor

MAY, 1926

SPEEDING TO SAVE

Just how many lives are saved by the arrival of a physician within a margin of a few minutes is indeed problematical. It is quite true that there are very few indeed. Yet it is not an uncommon sight to see a physician rushing frantically, in violation of the speed laws, to a patient who would have suffered none the more had the physician proceeded in a less spectacular and more orderly manner. Of course, those of the populace who happen to see him are filled with awe and wonderment and the family is deeply impressed. But the question may be asked, is it really justifiable? The difference in time in covering the distance to an average call while running at a safe and legal rate of speed is so small that the good that one may accomplish in that time is negligible. As has been said of the joy rider, "Those who run at break-neck speed have nothing to do when they get there."

But even more culpable is the practice of ambulances of speeding. In the larger cities it is of daily occurrence to see an ambulance racing through the streets with bell clanging or siren screaming and for no purpose at all. The ambulances of public institutions are the guiltiest of all. These conveyances are, as a rule, accompanied by an interne and he should be so equipped as to be able to render first aid on the scene and thus reduce the need of speeding to the lowest possible minimum. It is in striking contrast that one observes the private ambulances moving gently along. The reasons are obvious.

The slogan may be this: Speed when you have to, but be sure that you have to.

DEATHS

DEATHS

Dr. O. C. Godsmark, of Chattanooga, aged 64, died April 29. Dr. Godsmark was a graduate of the Curtis Physio-Medical Institute, Marion, Ind., in the class of 1895.

Dr. H. M. Taylor, of Greenville, aged 51, died May 11. Dr. Taylor was a graduate of the University of Tennessee, College of Medicine, Memphis, in the class of 1901.

Dr. C. W. Robb, of Goodlettsville, aged 68, died May 26. Dr. Robb graduated from Vanderbilt University School of Medicine, Nashville, in the class of 1879.

Dr. John P. Douglas, of Arlington, aged 92, died May 27. Dr. Douglas was a graduate of the University of Nashville, Medical Department, in the class of 1873.

NEWS NOTES AND COMMENT

Dr. J. W. Johnson, of Cornersville, has moved to Pulaski, where he will open a hospital.

Dr. W. M. Breeding has moved from Livingston to Crawford, where he has accepted a position as physician to the Briar Hill Collieries.

A patient who had spent some time in one of the ultra-scientific teaching hospitals, remarked that they had done everything to her but nothing for her.

ANESTHETISTS MEET

The annual meeting of the Mid-Western Association of Anesthetists will be held October 11-14, 1926, at Kansas City, Mo., at the same time as the Clinic Week there. Headquarters, Baltimore Hotel.

An interesting and attractive program is in the process of making. Any physician or dentist desiring to read a paper should

send the title of his paper to the secretary very soon.

RALPH M. WATERS, M.D.,
Secretary-Treasurer.

425 Argyle Bldg., Kansas City, Mo.

MEDICAL SOCIETIES

The Tri-County Medical Society, Humphreys, Hickman and Dickson, met at Waverly, May 4, with an attendance of twenty-four physicians, among whom were Drs. W. A. Oughterson, H. S. Shoulders, Duncan Eve, Jr., and John C. Burch, of Nashville. The next meeting will be held in Centerville the first Tuesday in August.

The physicians in Benton, Carroll, Henry and Weakley counties held a joint meeting in McKenzie, May 4, with a splendid attendance. Among the visiting doctors were Dr. Perry Bromberg and Dr. R. K. Sharp, of Nashville.

More than one hundred representative physicians and surgeons registered at the thirty-fifth annual session of the West Tennessee Medical and Surgical Association held in Jackson, May 27, 28. Memphis and Nashville were strongly represented, as were many of the smaller towns in Middle and West Tennessee. Officers elected were Dr. R. M. Little, of Martin, president; Dr. W. C. Duckworth, Jackson, vice-president; Dr. I. A. McSwain, Paris, re-elected secretary; Dr. George McSwain, Paris, assistant secretary. Dyersburg was chosen as the next meeting place, the date to be in May of next year.

The meeting of the Middle Tennessee Medical Society, which was held in Springfield, was perhaps the most successful in the history of that organization and the equal of any of the sectional meetings of the state. The program was disposed of with dispatch and the discussions liberal. The entertainment was most elaborate. Dr. T. D. McKinney, of Nashville, was elected president; Dr. W. W. Porter, of Springfield,

vice-president, and Dr. Sam P. Bailey, of Nashville, was re-elected secretary-treasurer. The next meeting will be held in Dickson in November.

The East Tennessee Medical Association held a meeting at Morristown, May 20, 21. The following officers were elected: Dr. H. G. Pangle, Russellville, president; Dr. George Sells, Johnson City, vice-president for upper East Tennessee; Dr. J. L. Proudfoot, Athens, vice-president for lower East Tennessee; Dr. Jesse C. Hill, Knoxville, secretary-treasurer.

MISCELLANEOUS

LOUISIANA STATE MEDICAL SOCIETY

Dr. J. F. Gallagher, Secretary,
Tennessee State Medical Association,
Jackson Building, Nashville, Tenn.

Dear Dr. Gallagher: Enclosed herewith you will find resolutions as offered by our Committee on Medical Education at our annual meeting, Monroe, April 17, 1926, and adopted by our House of Delegates.

We would appreciate your acquainting your county medical societies in regard to these resolutions.

Yours very truly,
P. T. TALBOT,
Secretary-Treasurer.

Whereas, the American Public Health Association at its annual meeting in St. Louis, in October, 1925, listening to an address by one of its members, favoring a new doctor in each community where a health officer is needed, to be known as a Doctor of Public Health; and

Whereas, several institutions of learning have introduced courses in public health whereby a layman as well as a physician may be instructed and in a comparatively short time qualify as a Doctor of Public Health (D. P. H.) and be allowed to advise, qualify and practice preventive medicine; and

Whereas, the Louisiana State Medical Society believes that all health officials should first be physicians (M.D.), who have the proper knowledge of the sciences concerned in public health, and that such knowledge cannot be gained by any layman in two or three years; and

Whereas, such an arrangement of a layman being a health official places a double expense on the community, since it is necessary for the community to then procure the service of an M.D. in addition to a layman; and

Whereas, the State confers on an M.D. the

right to practice medicine and surgery in all its branches, while the special licensing of a D.P.H. would be special legislation tending to take from an M.D. that right,

Therefore be it resolved, That the Louisiana State Medical Society believes all positions of trust pertaining to public health in any community should be held by physicians (M.D.), and not by laymen holding D.P.H. licenses, and

Be it further resolved, That the Louisiana State Medical Society views with displeasure any move on the part of the American Public Health Association, which may express a desire to replace physicians as health officials by laymen with D.P.H. licenses, and

Be it further resolved, That a copy of this resolution be sent to the American Public Health Association, to all those institutions of learning where courses in public health are given with a view to conferring a D.P.H. degree, to all medical colleges, to all State Boards of Health, and to every State Medical Society with a request that their component county societies be made acquainted with the proposed activities of a Public Health Association, whose president is a layman.

The Maury County Medical Society, at its meeting on May 17, 1926, celebrated the thirty-sixth anniversary of its existence with a social meeting held in the parish house of St. Peter's Church at Columbia.

There were present at this meeting four of the five living original members: Drs. J. A. Witherspoon, Robert Pillow, K. S. Howlett and W. K. Sheddan. There was also in attendance twenty-five of the twenty-eight members of the society.

The society had as its guests for the day from Nashville, Drs. Duncan Eve, Sr., J. A. Witherspoon, W. D. Haggard, W. H. Witt, William Litterer, E. L. Bishop and A. F. Richards; from Franklin, Dr. K. S. Howlett; from Pulaski, Dr. J. A. LaRue; from Centreville, Dr. C. V. Stephenson; from Hohenwald, Drs. Springer and Pickard.

The meeting was called to order by the chairman of the Committee on Entertainment and Program, Dr. O. J. Porter, our own and only Porter, who presided in his own inimitable way over the meeting.

The first matter on the program was an address on "Origin of the Maury County Medical Society," by Dr. J. A. Witherspoon, given in Dr. Witherspoon's own entertaining and interesting way. Next was an address by Dr. K. S. Howlett on "The Past

of the Maury County Medical Society," which was a delightful resume of the many ups and downs of the organization, given as only our own Howlett, who we loaned to our sister county of Williamson, could give. Next was a talk by Dr. W. K. Sheddan on the matter of "The Maury County Medical Society at the Present Time." The condition of the society at this time is one of which its twenty-eight members are more than proud, as we feel that we have one of the best in the country. Next on the program was a talk, "The Tennessee State Medical Society for Fifty Years," by that nestor of medical teachers, that prince of the medical profession, Dr. Duncan Eve, Sr., whom we all love and delight to do honor. This was followed by an address by the Chauncey Depew of the American profession, Dr. W. D. Haggard, on the subject of "Some of the Facts, Fancies and Fads of the Profession," which talk was a gem. This was followed by another talk on the same topic by Tennessee's own Oliver Wendell Holmes, the autocrat of the luncheon table on this occasion, our own W. H. Hitt, loaned by Lynnville, of Giles County, to Nashville, of Davidson County. This was followed by an exhibit of some rare natural curios by Dr. O. J. Porter, who also entertained in his own inimitable way those present with a description of some very rare specimens he had collected.

There was then served to the society and its guests a most bounteous and elegant lunch by the ladies of St. Peter's Church, which was most heartily enjoyed and much praised by every one present, after which the society adjourned until the date of the next regular meeting, the second Monday in June. Every one declared that the day had been most delightful and pleasant, and it was surely a red letter day for the Maury County Medical Society.

This society will always gladly welcome any and all to any of its meetings, so come at any time you may feel inclined, as we do our best to have a live program for all our meetings.

With best wishes to organized medicine,
W. K. SHEDDAN, Secretary.

BOOKS RECEIVED**ABT'S PEDIATRICS**

By various authors. Edited by Isaac A. Abt, M.D., Professor of Diseases of Children, Northwestern University Medical School, Chicago. Eight volumes, cloth, price \$10.00 per volume. Separate index volume free. W. B. Saunders Co., Philadelphia.

With the publication of Volume VIII, Abt's Pediatrics is now complete. This system, edited by Dr. Isaac A. Abt in collaboration with one hundred and fifty well-known authorities on children's diseases, is a monumental attempt to cover the whole subject of pediatrics. The work is in monographic form by men well known for their chosen subjects. In the eight volumes there is accessible a wealth of material not possible in a less pretentious work. The separate general index readily enables one to locate any subject.

Many topics barely mentioned in the usual books on pediatrics are treated at great length in this system. The various diseases of the several systems of the body are very fully covered. Considerable space is devoted to the surgery of childhood.

Each volume is profusely illustrated and extensive bibliographics accompany the chief monographs. There is some repetition of subject matter, but not as much as one would expect in a work of this size. The manner in which certain monographs are grouped proves puzzling, but with the completion of the index any subject is easily located. This system, like others, is voluminous, but this is compensated by the amount of information available.

To those interested in Pediatrics, this system edited by Dr. Abt will furnish a wealth of material. The work is monumental in the history of Pediatrics as a specialty, and will no doubt long remain authoritative in the field it so admirably covers.—R. H. P.

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THE GENESIS AND SIGNIFICANCE OF ABDOMINAL ADHESIONS*

ARTHUR E. HERTZLER, A.M., M.D., Ph.D., LL.D., F.A.C.S., Kansas City, Mo.

THE facility with which adhesions occur about reactive processes within the peritoneal cavity secures us against the multitudinous perforations through the walls of the hollow viscera to which we are liable. The formation of adhesions likewise is the fundamental actor that makes intra-abdominal operations possible.

It is desirable, therefore, that every surgeon have a clear notion as to the mechanism of this process. Such knowledge is desirable not only because he is better able to understand what nature is attempting to do when he views disease processes in the course of an operation that he may aid the process or remove the baneful effects when nature over-reaches in her effort to protect the individual during the course of a disease.

It is of equal importance to understand what adhesions do not do. Mischievous operating is done to attack adhesions which are in no wise related to the symptoms of which the patient complains. Such operations remind me very much of a pup I possessed when a lad. By the simple process of making a hole in the ground with a stick I could set this young canine to the most

vigorous digging. The mere fact that he never found anything did not discourage him. The explanation is that he had enthusiasm and faith, but no discernment.

The peritoneum, be it remembered, is made up of a connective tissue layer bearing blood and lymph vessels, and is covered by a layer of endothelial cells. This layer of cells is so constructed that so long as it is uninjured no adhesion occurs. When it is injured, however, a fibrin-forming material escapes which, coming into contact with other surfaces, forms a bridge of fibrin between the two opposed surfaces and we have an adhesion. When the peritoneum is injured by an inflammatory process the adjacent vessels dilate and small channels which previously had not carried formed elements of the blood do so. The result is that the exudate at the site of injury is enormously increased. There is thus set in action a protective and a combative mechanism. These two factors, though often associated, are fundamentally different, the one looking to permanent, the other to temporary adhesions.

These two definite forms of adhesions, the temporary and the permanent, may be studied separately.

Temporary Adhesions.—Temporary adhesions are those which disappear by absorption after the need for their presence

*Special address in surgery. Read before the Tennessee State Medical Association, Memphis, May 11, 12, 13, 1926.

has disappeared. As an example of this form, the adhesions about an acute appendicitis may be mentioned. During the height of the attack the omentum and adjacent intestinal coils become adherent to the diseased appendix. The attachment is not firm, for the surgeon's fingers can easily separate them. Yet they are firm enough to prevent the spreading of the appendiceal infection to the surrounding peritoneal cavity. After a period of from three to nine months these adhesions will have disappeared and the appendix again lies free, with perhaps little evidence of its past disease. Frequently, of course, some adhesions remain, but the larger part will have disappeared.

It certainly is a beneficent thing that the protective adhesions do disappear after they have served their purpose. Otherwise, if all the adhesions remained our bellies would become a conglomerate mass as the result of the various diseases we experience throughout a lifetime.

The reason these adhesions disappear is that they are formed by a granular fibrin. Such a fibrin is incapable of forming adult fibrous tissue, and in the course of time is absorbed. As the intensity of the infection abates the polynuclear cells disappear and the large mononuclears take up this imperfect fibrin. They are unable to absorb fibrillar fibrin, but take up readily the granular form.

This property of the various cells gives rise to a general law that the more intense the infection the more certainly will the adhesions become absorbed. The failure to recognize this fundamental law finds expression in the belief of surgeons that the more intense the infection the greater will be the resultant adhesions. Unfortunately their misconception does not result only in talk. Such surgeons, when operating in the presence of such adhesions, as during an appendectomy, "break up," as they say, such adhesions, believing that by so doing they will prevent the unfavorable result such adhesions would cause later on. It is clear that by leaving such adhesions unmolested the immediate as well as the

remote interest of the patient is best subserved. That is the reason such surgeons are dangerous to the patient. By removing nature's barriers the infection is allowed to spread. The least possible disturbance to the adhesions consistent with the correction of the offending lesion is the best surgical practice. If he will proceed in this manner nature will remove the needless adhesions just as soon as they have served their purpose.

Permanent Adhesions.—When the peritoneum is injured to the extent that the epithelial layer is destroyed in the absence of inflammatory reaction permanent adhesions form. The exudate which escapes on the injured surface within a half or two hours forms fibrillar fibrin. This quickly forms an adult fibrin, which is the permanent adhesion. This occurs whether the surgeon desires it or not. He desires it when he makes an anastomosis of a gut, otherwise there would be no union. On the other hand, when he closes his incision he does not desire an adhesion along the line of his incision. The answer is, he must not leave any injured peritoneum exposed to the reach of the viscera or omentum. Also, he must not operate so awkwardly that he inadvertently causes adhesions on the surfaces of viscera in the region of his operation. If it is necessary to injure the peritoneum, as in the removal of tumors, he must be careful to cover these denuded areas with uninjured peritoneum if he would avoid the formation of undesirable adhesions. Herein lies the whole secret of the avoidance of undesirable adhesions and the achievement of successful abdominal surgery.

Undesirable Results of Adhesions.—We hear much about the undesirable consequences of adhesions. There are some undesirable adhesions in fact, but they are as a whole by no means deserving of their reputation. They are made the bugbear of poor surgery. Only in part in technic but still more in diagnosis. Rarely in acute processes, adhesions so form during the course of an inflammatory process as to cause occlusion of a gut—very rarely in-

deed unless the surgeon's art has aggravated the process. Usually the obstruction is temporary and time will release them. Permanent adhesions may cause adhesions likewise by causing occlusion of the gut lumen. This likewise is very common.

In the vast majority of cases in which the patient is alleged to be suffering from adhesions they are really suffering from the disease from which they were originally suffering. When it is discovered that the patient is not relieved by the operation, the surgeon has the choice of choosing between a confession of a wrong operation or blaming the adhesion. The patient does not know that the surgeon is as much at fault if he has left harmful adhesions as when he makes a poor diagnosis. For instance, the surgeon removed the appendix for a renal or gall bladder colic, some pelvic disease or what not. The patient naturally is not relieved and the adhesion is blamed. As a matter of fact that kind of surgeon usually does leave adhesions behind him, but that is not the cause of the continuance of the pain. The family doctor often contributes to the patient's distress by attributing unrelated pains to the presence of adhesions even after a properly performed operation on a comprehensively diagnosed surgical lesion. Sometimes, too, men who can take pictures with an x-ray machine can demonstrate to the credulous patient the actual presence of adhesive bands.

Unfortunately there is nothing so well calculated to fix the mind of the credulous neurotic patient as the mythical adhesions. Such patents are always ready to be re-operated for "adhesions." Unfortunately if sufficiently often operated on by equally credulous surgeons, for adhesions, baneful adhesions will sooner or later result. Thus ultimately the patient may reach such a state that an operation will finally be needed.

In but rare instances adhesions do cause trouble. The temporary adhesions of infections sometimes occlude the lumen of the vessel producing obstruction. This obstruction, usually only partial, is largely

due to the inflammatory exudate into the wall of the gut. This exudate usually quickly subsides and intelligent restraint on the part of the surgeon will obviate the necessity of an emergency operation. Internists too often make life miserable for the surgeon. Ignorant of pathological processes within the abdomen, and seeing only the evidences of obstruction, urge the surgeon to operate. When the occlusion is complete, of course relief must be secured by a secondary operation. Unless the source of obstruction is obvious the condition is best relieved by enterostomy. If relief is attempted by separating a number of adhesions reformation will quickly take place and the obstruction will be as before.

Often the obstruction is not actual but simulated by the temporary paralysis of the bowel. This paralysis is often purposive in that the immovable bowel aids in walling in the infection. This condition is made evident by pronounced tympany. Expectant treatment is imperative.

The permanent adhesion rarely causes trouble. It is astonishing how extensive adhesions may be without causing the patient discomfort. One must know when one looks into an abdomen in which adhesions exist whether or not they are the cause of the symptoms or if some other lesion must be found. One often sees in tubercular peritonitis vast conglomerations of intestines closely attached by adhesions without there being any evidence of disturbance in the intestinal circulation. Before an adhesion can be convicted of causing trouble the surgeon must be able to say just in what manner the adhesion causes trouble. If this is not done he is apt to tinker with the adhesion and overlook the real cause of the trouble.

It is quite common, for instance, after a gall bladder operation, to find many adhesions about the site of the operation. Do these account for the symptoms? Very seldom indeed. If the history indicates that the patient is still suffering from symptoms like those which existed before the primary operation one may be quite sure that the original cause still exists. It may

be a common duct stone, a renal infection or what not. It is always well to assume that adhesions are not the cause of the trouble. It is exceedingly rare for adhesions to be so extensive as to cause disturbance in the function of the biliary apparatus. I do not remember to have seen a single instance.

Patients often misunderstand us. Under the unconscious tutelage of their doctor they learn to say that the original symptoms were relieved, but the new complaints followed after a period of relief. This is regarded as incriminating evidence against adhesions. Such is not the case. An adhesion forms at once or not at all. The formation of alleged "traction bands" so enthusiastically hypothecated by law rests on no evidence. It is well known any operation commonly secured temporary relief from anything.

Be it always remembered that an adhesion causes disturbance only by interfering with function. A direct occlusion is rare. One does see it about areas in which an aseptic wound has been allowed to heal with large surfaces devoid of peritoneum. One sees it most commonly after badly performed pelvic operation. The lumen must be actually occluded before the adhesion may be rightly accused of causing the trouble. More commonly the adhesion produces an adventitious band about which a loop of gut becomes strangulated. In these cases the cause of the trouble is obvious as soon as the offending band is discovered.

An adhesion is a concrete thing may it be repeated. Before an adhesion is accused of causing trouble the surgeon must be able to demonstrate in just what manner the trouble is being produced. The trouble must have arisen since the operation was performed which produced the adhesion which is alleged to be causing the trouble. It most assuredly is not causing the symptoms which existed before the operation. Symptoms caused by adhesions cannot simulate the disturbances of other lesions.

The surgeon must always secure his own history from the patient and not accept the patient or the family physician's statement as to the time of the development nor the nature of the symptoms produced. Careful analysis should show when the symptoms developed and how they compare with the symptoms complained of. A direct question will very commonly lead to erroneous conclusions. Next to the divorce court the discussion of adhesions develops the most cheerful liars.

Conclusions:

1. Adhesions are of two types, the temporary and the permanent.

2. Temporary adhesions should not be disturbed. Nature will eliminate them when they have served their purpose.

3. Permanent adhesions do occasionally cause trouble, but in the vast majority of cases they are a bastard fiction, the product of a neurotic patient and an incompetent surgeon accouchered by the family doctor.

SUBACUTE BACTERIAL ENDOCARDITIS*

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ACCORDING to Blumer, the first unmistakable record of the clinical picture of sub-acute bacterial endocarditis is from the pen of W. Senhouse Kirkes and was published in 1852 in Vol. 17 of the Medical-Chirurgical Transactions, London. Other names important in the history of the disease are Leacereaux, Heubner, Osler, Mabel Austin, Harbitz, Lenhartz, Schotmeuler, Koeniger, Jockmann, Horder, Libmann, etc. Through the work of these clinicians, pathologists and bacteriologists we have finally come to regard the condition as a clinical entity with fairly characteristic anti-mortem and post-mortem findings.

At the outset, it may be helpful to recall that the term bacterial endocarditis refers to those cases of endocarditis associated with the presence and proliferation of bacteria in the mural or valvar endocardium. Sub-acute bacterial endocarditis is a term suggested by Libmann to include those cases of bacterial endocarditis characterized by a prolonged course.

Classification of the Endocarditides.—In order that those not familiar with the disease may become oriented, it may not be amiss to consider briefly the classification of the endocarditides. Endocarditis is by definition an inflammation of the mural or valvular endocardium. The common forms of acute inflammation of the endocardium are caused by:

1. The virus of acute rheumatic fever (whatever that may prove to be), chorea and tonsillitis. Possibly scarlet fever should also be included as a cause of the "rheumatic type" of endocarditis."
2. The spirochaete of syphilis.
3. Certain of the pathogenic bacteria (streptococcus hemolyticus, pneumococcus,

gonococcus, staphylococcus aureus, the colon bacillus and a large number of other less frequently encountered organisms).

The lesions caused by these agents and the clinical manifestations of disease associated with them are, as a rule, clear cut and not difficult of recognition. The systolic bruit of early mitral endocarditis, heard for the first time during the course of an acute polyarticular arthritis in a young individual, or the frank signs of mitral stenosis in a patient give a history of "inflammatory rheumatism," call to mind the frequency and importance of the rheumatic type of infection of the heart. The importance of syphilitic aortitis and aortic endocarditis has been stressed in a paper recently read before this society by Dr. O. N. Bryan. The third and less frequent type of infection is that caused by the presence of the common pathogenic bacteria (especially cocci) in the heart valves, and designated "Malignant bacterial endocarditis" because of its acute, fulminating, rapidly fatal course. The malignant bacterial group forms, in many ways a much more interesting and dramatic picture, clinically, than either the rheumatic or syphilitic cases, in that the causative organism can be demonstrated during life in blood culture as well as after death in the heart valves, in the vast majority of cases.

From this latter group (malignant bacterial endocarditis) there has been separated, in recent years, still a fourth type of infection. Various names have been applied to this sub-group, all indicating the outstanding feature of the endocarditis, namely, its sub-acute or chronic nature. It has been called "Chronic Septic Endocarditis" (Heubner), "Chronic Malignant Endocarditis" (Weber), "Endocarditis Lenta" (Schottmeuller), "Chronic Ulcerative Endocarditis," "Chronic Septicaemic Endo-

*Read before the Nashville Academy of Medicine, May 18, 1926.

carditis" (Riesman), etc. "Sub-acute Bacterial Endocarditis" (Libman) is the term in general usage in this country.

As in acute (or malignant) bacterial endocarditis, this fourth form of infection is associated with the presence of bacteria in the heart valves and usually in the blood stream, but it is characterized by a less acute course. At times it runs an exquisitely chronic course. The causative organism is also, as a rule, a streptococcus, but in contradistinction to the virulent pathogenic cocci of the "acute malignant" form of the disease, it is a streptococcus, which is widely distributed in nature and is in the great majority of cases altogether non-pathogenic and saprophytic: the streptococcus viridans. It is this organism which is present in the valvular lesion in ninety-five per cent of the cases. Curiously enough the remaining five per cent of cases are caused by *B. influenza*, another organism whose pathogenic proclivities are not striking—whose role in nature is not, as a rule, that of the virulent, invasive, rapidly killing "pathogen."

It is difficult to arrive at definite conclusions concerning the prevalence of a disease which has until comparatively recently been either overlooked, or placed in the category of the acute malignant type of endocarditis. The consensus of opinion of students of the disease (Lenhartz, Ebstein, Libmann, Thomas Lewis, Janeway and Thayer) is that its frequency has been underestimated. That it is not a rare disease is evidenced by the fact that Libmann, of New York, has seen some 800 cases. Both from Germany and England come reports that the incidence of the disease has been on the increase since the war. Reports from clinics in this country would tend to indicate the same fact, although in both instances it is possible that the increase is more apparent than real—that it is a reflection of the increased ability of internists to recognize the condition.

Pathology.—It is well to preface any discussion of the pathological change which takes place in the valves as a result of implantation with streptococcus viridans,

with this statement: Sub-acute bacterial endocarditis is almost always a secondary infection of the endocardium. So far as we know the "green streptococcus" has a very limited capacity to initiate damage in a perfectly normal endocardium. When once the endocardium is injured, whether it be by the rheumatic virus, the spirochaete, degenerative processes of arterio sclerosis, or congenital defect (Robinson, Lewis) it becomes subject to implantation of this organism. The result of such implantation is characteristic: a proliferative rather than destructive change takes place at the site of the old endocardial lesion, with the production of verrucous and polypoid vegetations. Ulceration is rare. Localization on the valves of the right heart is infrequent. The disease confines itself usually to the mitral and aortic valves and to the mural endocardium. Often the chordae tendinae are involved. The organisms are found on the surface and imbedded in the substance of the vegetations. Extension and heaping up of the lesion, together with a tendency to focal healing and even calcification, occur. It is a remarkable fact, difficult of explanation, that in sub-acute bacterial endocarditis, the myocardium and pericardium are rarely involved, in spite of the proximity of the focus of infection at points favoring direct extension, and in spite of the almost constant bacteraemia which accompanies the disease.

Although sub-acute bacterial endocarditis is a bacteraemic disease, the lesions usually found at autopsy in other diseases associated with generalized infection are startlingly few. Abscesses of liver, kidney and myocardium, acute pericarditis, meningitis and subcutaneous abscesses are rarely seen. In the patients whom I have seen, only one of these complications was recognized clinically (pericarditis), and that in only one case. This is also the experience of observers who have seen large numbers of cases.

Another curious fact concerning the pathology of the disease is that, in spite of the infection being primarily cardiac, myocardial insufficiency, or "heart failure," is

very slow in developing and never assumes the importance in either the clinical or pathological picture that one might suspect. Heart failure is not a striking feature of either the bedside picture or of the autopsy findings.

As one would suspect in a disease characterized by the presence of large vegetations on the heart valves and bacteriemia, embolism is common and may affect any part of the body. Pulmonary artery, cerebral artery, splenic artery, renal artery, main stems or branches, may become occluded. So may the vessels of the extremities; indeed, arteries anywhere in the body are subject to occlusion. Lodgement of emboli in the visceral vessels results in infarction, one of the commonest complications encountered in the disease (especially splenic or cerebral infarction). This same phenomenon produces an embolic, focal nephritis, due to occlusion of the glomerular capillaries by bacterial emboli. A striking and constant feature of these embolic lesions, regardless of their location, is that suppuration does not occur in spite of the presence of so-called "septic" emboli.

The Clinical Picture.—A discussion of the symptomatology of sub-acute bacterial endocarditis may be introduced by relating the following fairly characteristic case report: A business man of sixty had been treated for ten years for syphilitic aortitis, aneurism of aorta and aortic insufficiency. During this period his course had been essentially an uneventful one. As is indicated by the length of time he carried his lesion, his response to antisiphilitic treatment had been satisfactory and the valve defect had remained fairly well compensated. During the tenth summer after the onset of symptoms, he complained, for a period of several weeks, of lassitude and weakness, and of becoming exhausted on the slightest exertion. Then one evening, after a twenty-four-hour railroad journey, he experienced a shaking chill, followed by fever and increased asthenia. He was admitted to a hospital where he had been previously examined. It was noted that his pallor had increased. He was quite weak

and became exhausted easily and there was a low evening fever (temperature 101-102 degrees). The physical examination disclosed no new signs over his precordium, but a petechial spot was present in one of the conjunctival sacs. During a period of observation extending over a week or ten days he showed no improvement. He complained of some vague substernal pain, of progressive weakness and of occasional chilly sensations in the afternoon. A moderate leukocytosis was present and an occasional red blood cell was seen in the urine. A blood culture was made and revealed non-hemolytic streptococci—three to four colonies per c.c. of blood. When I first saw the patient, several weeks after his discharge from the hospital, he showed the evidence of a chronic, low grade infection, weakness, anorexia, loss of weight, low fever, occasional chilly sensations and sweats, associated with mental depression and a feeling of profound malaise. Beside, there had developed symptoms of outspoken myocardial insufficiency (orthopnea, nocturnal dyspnea, frequent cough, epigastric discomfort, and slight swelling about the ankles). Examination revealed other evidence of beginning heart failure (rales at the base of the lungs, and enlarged tender liver, slight edema over the sacrum and about the ankles). Moreover, definite clubbing of the fingers, and a petechial spot in the conjunctiva on one side were present. Later, on one occasion, the patient complained bitterly of a painful finger tip, which showed nothing on examination. In the course of two or three days this symptom disappeared. A second blood culture was made. A non-haemolytic streptococcus (*streptococcus viridans*) was obtained. The patient ran a progressively "down hill course," finally dying from heart failure and exhaustion several months after the onset of the complication.

If the symptoms and signs of the disease be analyzed it becomes evident that there are two main groups:

1. So-called "toxic" phenomena of infection.
2. Phenomena due to embolism.

1. First, we shall briefly consider the "toxic" signs and symptoms. Concerning asthenia little need be said. It is, in the majority of cases, the presenting symptom and together with anorexia, loss of weight, and fever, not infrequently misdirects the attention of the examiner to the lungs. Fever is almost invariably present. In contradistinction to acute malignant bacterial endocarditis, the temperature in sub-acute bacterial endocarditis is not excessively high. It rarely exceeds 103 degrees and is usually less. The temperature curve is intermittent or remittent in type, and occasionally one encounters the "chill, fever and sweat" triad of malaria. Chills or chilly sensations, and sweats may be entirely wanting. During the prolonged course of the disease afebrile periods of a day or days may occur, although in the majority of cases evening fever persists with monotonous regularity. A leukocytosis of ten to fifteen thousand is present during the febrile periods.

As accompaniments of the fever, headache, indefinite gastrointestinal symptoms, arthralgia and malaise are almost always present. Secondary anaemia is a constant finding. The color of patients with this disease has been variously described as "Café au lait" (Libmann) lemon color, waxy, etc. Pigmentation is common and, when present, modifies the usual waxy pallor of anaemia.

Cardiac symptoms, though rarely in the foreground, are usually encountered. Substernal discomfort is frequent. Palpitation, dyspnoea, precordial discomfort and symptoms of visceral congestion occur (cough, epigastric discomfort, nausea, etc.). On examination of the heart one finds signs of valvular disease.

2. In the second group of symptoms and signs—the embolic phenomena—one encounters the most dramatic features of the disease. A sudden hemiplegia or the occurrence of amaurosis or aphasia in an individual suffering with an obscure fever may be the first symptom suggesting a vegetative endocarditis. Splenic pain (infarction) is common and was present in all

the cases I have seen. Embolism of peripheral arteries sometimes occurs. An embolic (focal) nephritis is almost always present as evidenced by varying degrees of hematuria, albuminuria, impaired renal function, etc.

Skin eruptions, and especially petechiae, constitute an important diagnostic sign. The latter are usually seen as small intracutaneous hemorrhages, one-half to two mm. in diameter, which do not fade on pressure and which are especially prone to occur in the skin of the neck, outer aspects of the arm and lower axilla. Best of all are these lesions seen in the skin of the ears (direct illumination), and in the palpebral conjunctivae. When discovered in febrile patient with known chronic valvular disease, petechiae constitute the most important single sign of sub-acute bacterial endocarditis.

Another common and helpful diagnostic symptom in my experience is the occurrence of single or multiple tender spots in the pads of the fingers and toes. There can be no doubt that this, like the petechial spots, are due to minute bacterial emboli. These lesions may exhibit no other local signs than tenderness. When redness and slight elevation of the skin is present we have the "ephemeral painful nodular erythema" described by Osler in the *Gulstonian Lectures* in 1885, lesions which are now generally known as "Osler nodes." They are trivial and transient signs, but constitute exceedingly helpful pointers in the diagnosis of what is often an "obscure febrile disease."

Myalgia and arthralgia occur. Pain and swelling in the joints may be present which, together with the cardiac signs and symptoms, may lead to the diagnosis of acute rheumatic fever.

Lastly, clubbing of the fingers is a very common and important sign of the disease. In the experience of Cotton, of the University College Hospital and Medical School, clubbing of the fingers in cases of structural heart disease occurring among adults, is usually associated with sub-acute bacterial endocarditis, and while not conclusive,

is one of the most valuable clinical signs of the disease we possess.

A discussion of the clinical aspects of sub-acute bacterial endocarditis would not be complete without a consideration of some of the atypical case reports which have been published in recent years. I am personally unfamiliar with any variety of the disease which is not characterized by frank evidence of previous endocardial damage, by evidence of chronic infection, usually by a persistently positive blood culture, by embolic phenomena of one sort or another, and, finally, after more or less prolonged "down hill course" by death. After having seen several cases of this type I have naturally come to share the almost universal opinion that the disease, in the great majority of cases, is one of fixed symptomatology and, once the diagnosis is established, of certain fatal outcome. That other varieties may be encountered is evidenced by reports from Canada, England and this country.

Rare cases of sub-acute bacterial endocarditis are described which, after a longer or shorter febrile period with positive blood cultures, became afebrile. The organisms can no longer be demonstrated in the blood stream and fever disappears. These are the so-called "bacteria-free cases" of Libmann, and are manifestations of the tendency of this form of endocarditis to heal. Unfortunately, after the danger of infection has passed and the patient has, for the time being, checked the proliferation of bacteria in the endocardium, the danger of embolism and of heart failure due to the valvular defect persist. The patients continue their "down hill course," eventually dying of heart failure, renal insufficiency (uremia), cerebral embolism or of an intercurrent infection (pneumonia). As would be expected, relapses have been observed in this group with a recurrence of symptoms and signs of active endocardial infection, and of positive blood cultures.

In 1915, Ollie, Graham and Detweiler reported twenty-three remarkable cases in which the blood cultures contained streptococcus viridans and which were diag-

nosed sub-acute bacterial endocarditis. In 1924, in a second communication on these twenty-three cases, the authors report four "well," fourteen "fairly well" and able to work, two "live but invalids." Three of the patients could not be traced. Excepting the three cases about which no information could be had, no deaths had occurred during the nine-year interval between the two reports. Able observers have reported similar cases of recovery in the United States (Capps, Biggs, Major and Janny Smith), and in England (Coombs). It would seem that these so-called "mild infections" are not so infrequent; that they may occur in individuals who may or may not present evidence of previous endocardial disease, who have little or no fever, who may be able to continue their work, who show little or no anemia, whose major complaint is weakness and a slight feeling of lassitude. The outstanding diagnostic sign is the presence of streptococcus viridans in the blood culture. Libmann reports a case in which the blood culture was positive on thirteen occasions (three to 200 colonies per cc. blood) over a period of eighteen months. The man, at the time of the report, had regained his full weight and looked well.

It seems, then, that there are three varieties of the disease:

1. The infrequent, "mild" infections. These are the cases with or without previous heart disease, and with but few signs and symptoms other than a positive blood culture. These presumably may become severe, going over into the commonly recognized group, or may completely heal, with recovery.

2. The "usual" variety of the disease with frank signs and symptoms of a sub-acute bacterial infection engrafted upon a previously damaged heart valve. These, in the majority of cases, progress to death with persistence of infection as evidenced by fever, symptoms of toxicity, leukocytosis and positive blood culture.

3. Finally the "bacteria-free" group, cases in which the infection has terminated, leaving behind the damaged valve with

large healed, bacteria-free vegetations. In this group, heart failure, cerebral embolism, renal insufficiency, relapse or intercurrent infection terminate the disease.

Prognosis.—Of the cases which I have personally seen—and these were of the “usual,” more commonly recognized variety with outspoken cardiac lesions and persistent evidence of infection—all save one have died. The last, which I saw through the courtesy of Dr. W. H. Witt, of Nashville, Tennessee, is still alive. There is no doubt in Dr. Witt’s mind that the outcome will be fatal in this case, and with this opinion I fully agree.

Osler reported no recoveries in ten cases he recorded.

Thayer has seen only one recovery in a series of over 200 cases.

Libmann, who has seen several hundred cases of this “usual” type of bacterial endocarditis, has recently reported complete recoveries in ten.

Capps, on the other hand, regards the prognosis as not invariably bad.

That there are authentic cases of subacute bacterial endocarditis of the type unded discussion which have recovered with no residuum except chronic valvular disease is certain, though they seem to be very infrequent exceptions.

The same statement holds for the so-called “bacteria-free” cases. These are usually encountered late in the course of their disease, after more or less healing of the lesion has taken place. The outcome of the disease, in the experience of those who have seen many cases, is fatal. Death is usually due to failure of the heart to compensate for the defective valve (*i. e.*, myocardial insufficiency) or to the renal insufficiency (uremia) of embolic nephritis, or to cerebral embolism. As previously stated, cases, which when first seen definitely fall into this “bacteria-free” group, may relapse with reappearance of signs and symptoms of endocardial infection, and thus go on to exodus. Intercurrent infections, as pneumonia, account for the remainder.

Concerning the last type (the mild transient bacteriemias of streptococcus viri-

dans origin) I can say nothing from personal experience. They are set aside in a group by themselves by students of the disease, for the reason that they are quite atypical. In them, demonstrable valve lesions may be wanting and fever and anaemia absent. One wonders if, in the final analysis, some of the reported cases of this group actually had endocarditis at all—whether they may not have crept into this classification merely because of the presence of a transient streptococcus viridan bacteriemia. How often, among patients presenting themselves for examination, these transient bacteriemias occur, it is difficult to say. Perhaps they are more frequent than we would be led to believe from observation made in a routine hospital practice. If that omnipresent explanation of obscure aches and pains, arthralgias and myalgias, arthritides and nephritides has any platform upon which to stand (I am referring to the focal infection theory), transient bacteriemias must occur a great deal more frequently than any of the “old-line” workers in clinical bacteriological laboratories will admit. However this may be, of the cases reported as belonging in this category (mild streptococcus viridans endocarditis) practically all have recovered or are at least still alive.

Treatment.—The treatment of sub-acute bacterial endocarditis can be dismissed with a word. Clinical experience has proven that, with but few exceptions, the progress of the disease is entirely unaltered by any measures specifically directed against the infection. Vaccines, blood transfusions with normal blood and with blood from donors previously immunized (vaccinated) against the organism isolated from the recipient’s blood, chemotheopy (sodium cacodylate, gentian violet, mercurochrome, neutral acriflavin and numerous other drugs) have all been tried with discouraging results. Capps, of Chicago, has reported considerable success from the use of sodium cacodylate intravenously (three grains daily over a period of from eight to sixteen weeks). By the use of this method he feels that the mortality can be appreciably

reduced. One group of eighteen of the St. Luke's Hospital cases (reported by Biggs) were so treated with a death rate of fifty-one per cent. A control group of twenty-one patients to whom the drug was not given had a death rate of sixty-eight per cent. It is almost certain from these figures that many of the so-called "mild cases" were included in both series, and it is impossible to escape the conclusion that Biggs' statistics are misleading, both as to the mortality of the disease and as to the effectiveness of the therapy employed.

A protracted discussion of the treatment, other than that bearing on the specific infection, would be uninteresting and out of place before this society. The supportive and symptomatic treatment is that of any chronic infection.

Prophylaxis.—In closing, a word should be said concerning the prevention of this almost invariably fatal malady. Here, if anywhere in medicine, an ounce of prevention is worth a pound of either induced or spontaneous cure. Attention to definitely

proven infections, especially those about the mouth and pharynx, in individuals with known valvular lesions, has a sound therapeutic basis, in the light of the possible future development of sub-acute bacterial endocarditis. Libmann urges the use of prophylactic autogenous vaccines, prepared from these potential sources of infection as a possible aide in decreasing the incidence of the disease among patients with chronic endocarditis.

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CO-OPERATION OF PRACTITIONERS WITH THE X-RAYIST OR RADIOLOGIST*

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AT the Knoxville meeting, two years ago, I read a paper on Co-operation of the Surgeon and Radiologist in the Treatment of Malignancy. Now it is on the question of a conference of the radiologist with, not only the surgeon, but with the practitioners in all branches of medical practice, in the matter of arriving at a diagnosis.

The usual procedure is that the patient is sent in to the radiologist with a request that some specific part be rayed, such as the accessory sinuses, or mastoids, or chest, or G. I. tract, or G. U. tract, giving the radiologist very little and often no idea of what is most definitely of interest or to be searched for.

The burden of this paper is to show that the radiologist, being a graduate in medicine, most of them having served internships, is entitled to all the clinical information possible to be obtained as a full-fledged consultant, in order that he may arrive at a more definite and logical conclusion for the best interest of the patient. It has been said that should the radiologist first obtain the clinician's point of view or tentative diagnosis or impression, his conclusion may be biased. I think this viewpoint does not apply particularly to the x-rayist of experience. I think it would be well in some cases, after making the x-ray examination indicated, to register the impression or tentative conclusion and then receive the clinician's views on the case, which may or may not change the radiologist's views, for in many cases x-rayed it is to be remembered that the evidence is there before the eyes as plain as black and white.

When, however, the radiologist is con-

sidered as a full fledged consultant, then his responsibility is increased, particularly in questions of fractures, gall bladder disease, kidney disease, brain tumors, pulmonary tuberculosis, pericarditis with effusion, etc. The element of human error cannot be eliminated in the field of roentgenology any more than in surgery or internal medicine; however, when the radiologist receives full recognition as a consultant and all the history and clinical evidence, then he should bear his portion of the responsibility to the patient.

Guido Holzknecht, of Vienna, in an article on the training of physicians in roentgenology in the March, 1926, issue of *Radiology*, says: "Since roentgenology is directly connected with all branches of medicine, the roentgenologist must be well trained in general medicine. He must be able to discuss dental granuloma, ethmoidal cell affections, quadrants of the bulb, types of tuberculosis, also the more rare heart affections, abdominal symptoms, types of bandages for fracture. With the dentist, as if he were a dentist; with the ophthalmologist as if he, too, were an ophthalmologist, etc. His duties will relate to applied general roentgenology, or to express it in approximate figures, there will be ten per cent roentgenology, applied to ninety per cent general medicine. To be sure, he will not be expected to encompass the whole range of these branches, but only the knowledge of the border line regions. But even for this the knowledge gained in the ordinary medical course will scarcely suffice. . . . The physician who was not well grounded in internal medicine before he took up the study of general roentgenology will be at a loss when expected to discuss cases with the specialists who refer cases to him."

*Read before the Tennessee State Medical Association, Memphis, May 11, 12, 13, 1926.

In a paper by Louis Frank, M.D., F.A.C.S., Louisville, on The Relation of the Roentgenologist and His Work to the Surgeon, delivered before the Radiological Society in convention at Cleveland, Ohio, December, 1925, he says: "Today the value of the x-ray as a diagnostic aid has been firmly established; in fact, so valuable has this aid become that with a broad application of physics in conjunction with chemistry, diagnosis from history and by purely physical examination would seem to be almost a lost art." I do not like to put it that way—I think that the full clinical examination should be carried out and the x-ray findings compared with the clinical findings. There is just a little too much tenency to depend too entirely on the x-ray report, when the Radiologist, as previously suggested, may not have been taken into the case as a consultant and without the information already gained, may be handicapped in forming a conclusion. This point will be illustrated later. Dr. Frank further said: "The radiologist should witness the operation upon those in the diagnosis of whose ailment he has assisted; he should study with the surgeon living pathology, checking himself in his work. The relationship between surgeon and roentgenologist should be an exceedingly close one, based upon mutual understanding of the inability of either to progress or do the work to which humanity is entitled, without the aid of the other. (This, of course, also applies to the internist and the various specialists.) He goes on to say: "This being true, recognizing the preparation necessary to qualify one to engage in this work as a specialty, bearing in mind the vast gulf separating the radiologist from the technician, should we not collaborate more closely?" Again he said: "Should not your invaluable assistance *follow actual consultation* with a full knowledge of the history and the opportunity to elaborate the same, rather than a request for an examination of some particular part of the body, as the alimentary tract, or the sinuses or the G. U. tract? If you are to do your best work, if

we are to obtain the greatest benefit therefrom, it seems this would be the proper and logical procedure. Just as the surgeon does not accept the dictum from the attendant as to his procedure, just so should you ascertain the history, principal symptoms, and upon these, after consultation, do your radiological study. There is too great a tendency, I fear, to dictate by request, the investigations you are to make, thereby restricting a free exercise of the knowledge and judgment you possess, and curtailing the benefit to be given the patient by your work."

Illustrating the point taken, that a consultation should precede the final x-ray report: A patient is sent in for x-ray examination of the chest. The fluoroscopic examination has been made, showing no evidence of cardiac pathology, no diaphragmatic adhesions, no pleural thickening or effusion but there are many fibrotic changes on both sides, and an increased density of one or both hilus areas with hard shadows of calcified deposit and probably a dilated bronchus. Associated with the fibrotic branches, into the bright upper lobe, say, there are fairly hard shadows showing a slightly mottled effect—not the characteristic shadow seen in definitely active tuberculous disease, but still a shadow indicating an inflammatory reaction that has practically subsided. This shadow is unquestionably tuberculous, but the condition described in the hilum, plus the dilated bronchus, could just as well have been caused by a descending infection from the accessory sinuses above. Faced with such findings, the x-rayist is in need of the clinical evidence to decide the question of tuberculous activity, the presence of rales, elevation of temperature, whether losing or holding weight, cough, duration of the condition, all being necessary to establish a rational conclusion to which the patient is entitled. Now if there is a strong suspicion that the sinuses are partly the cause of the findings in the chest, then certainly the radiologist should have the privilege of going ahead with examination of the sinuses in order to clear this point; in other

words, a *conference* and comparison of the findings of both the clinician and the radiologist are required to render the patient the service that he is entitled to, and as to the sinus question, services of the EEN&T specialist may be needed, as well as the x-ray examination of the sinuses, for if a positive x-ray finding is made, it is necessary then to know what to do about it.

On the other hand, or the other way around, I examine this case and think it is an inactive tuberculous disease, and only report a description of findings in radiological terms, the clinician would likely be just as much or more at sea to interpret these terms into pathology, as the radiologist in the first case was in need of the clinical findings.

And so it goes—in examination of the G. I. tract, the gall-bladder should very often be also examined and a history of the clinical evidence is essential, also in examination of the G. U. tract, etc.

Some of the EEN&T specialists take the attitude that x-ray examination of accessory sinuses are of very little value. I think this attitude is largely due to two reasons:

- (1) That they do not have enough interest in the x-ray end of the examination to go to the x-ray laboratory and go into the details of the clinical findings with the radiologist, while at the same time the films are studied.

- (2) That most of those who make such claims have not had enough cases x-rayed to justify such claims. There are bound to be errors in x-ray diagnosis, just as in any branch, and when one refers only to a half dozen cases per year, and particularly without consultation, it may be possible that fifty per cent of the six may be reported as showing an antrum or ethmoid involved, and containing pus that was not found at operation, when if twenty-five or fifty cases had been referred, the same percentage of error may not have been increased materially.

To make a long story short, my suggestion is that when you send a case for x-ray examination, first have confidence in that

physician radiologist to whom you send the case, and consider and co-operate with him as a full consultant, giving both the clinical findings and plenty of leeway as to what, when and how much x-raying should be done, and please do not set the price. The radiologist can usually be depended upon to do what is right and arrange satisfactory price and terms with and to the patient.

DISCUSSION

DR. H. S. SHOULDERS, Nashville: I heartily concur in every word of Dr. Marchbanks' paper. After all, the ultimate end of an examination is to try to arrive at an accurate diagnosis if that is possible. We, as roentgenologists, are not mere technicians and we should have certainly a working basis, or an idea of the conditions with which we are dealing, as most of us learn more by mistakes, perhaps, than we do by making diagnoses many times.

In this connection, I would like to report just a case that I saw some three or four weeks ago. The case was referred to me for a chest examination. In making that examination we found mottling in the lung with fluid in the base with a fibrous shadow above the fluid. I did not get the history and was not told the history of the patient. I was very positive that the shadows and mottling in the apex indicated this was a tuberculous condition, and went on the assumption that the fluid in the base was perhaps a tuberculous fluid. The physician who had the patient in charge at that time evidently concurred in that diagnosis, and perhaps let me overinfluence him, and let it go at that.

The patient was not satisfied, fortunately for him, and called in another physician. Fortunately for me, that same one referred the case back to me for another examination. He had taken a very careful history of the case, and he was of the opinion that the patient had a sub-diaphragmatic abscess, which ultimately at operation proved to be correct. That patient had a sub-diaphragmatic abscess perhaps produced by a perforated duodenal ulcer which we proved by x-ray examination to be present. Had a careful conference been had perhaps by all concerned we would not have made the first mistake.

Fortunately for the patient he called in the other man, who made a correct diagnosis by taking the history accurately. Of course the x-ray examination was of great aid to him at both times, and had I known the correct history, perhaps I would have changed my ideas. I did not change my idea, but thought the patient had tuberculosis. Now, that is one of our mistakes.

On the other hand, a number of times a patient

has been referred to me for a gastro-intestinal series. I have always made it a practice to look over the chest, especially with the fluroscope. On several different occasions we have discovered—I will say in a few cases—miliary tuberculosis where the leading symptom was the stomach. I had been requested to make a stomach examination and find the patient suffering from tuberculosis.

DR. S. S. MARCHBANKS, Chattanooga (closing): Referring to the radiologist's ability as a consultant regarding internal medicine and surgery, and all that, I do not mean to be presuming as to anything I might know along these lines. I simply want to be of benefit to the patient.

RELAPSES IN MALARIA*

WILLIAM KRAUSS, M.D., Memphis, Tenn.

IN any attempt to wage a campaign we must have a clearly defined objective and then direct all our energies toward it. For a broad foundation we begin at fundamentals:

What is malaria?

Do we have malaria?

What harm is there in having malaria?

What can we do to control it?

As medical men we are interested only in the fourth query. Then, what means are at our command for malaria control? The immortal Carter enumerates them under four heads:

1. Getting rid of anopheles.

2. Prevent access of mosquitoes to well men.

3. Prevent infection of mosquitoes.

4. Immunizing people against malaria.

The interest of the practicing physician centers upon the last two methods. Relapses in malaria are the major problem of the doctor in malaria control. The voluminous literature upon war experiences with malaria shows that relapses are frequent and quite refractory to treatment. Many physicians do not fully realize this. They look upon all cases of malaria as new infections unless a decided history of recurrent malaria is presented. In the presence of much relapse malaria the technic of control becomes complicated. We find that as public control measures progress malaria tends to become focal. The mech-

anism of operation then changes. The first step is early recognition of first cases by laboratory diagnosis. Clinical diagnosis may have to be depended upon in emergencies, but laboratory diagnosis is the starting point in present-day control operations. The U. S. malaria laboratory, offering its facilities through the public laboratories of the health departments, is not made use of as it should be. A report through these channels automatically puts the technic of control up to the local health unit. This is the logical way of stopping foci in their incipency. Thus it is seen that the practitioner becomes the pivot man in malaria control. In looking for the source of infection much malaria will be found that cannot be accounted for. In our own territory it has been shown, for instance, by Howard, that previous to control the proportion of relapses to new cases was 44.3 per cent, but after one year of control work it had risen to 61.2 per cent. The great importance of relapses can be seen from this one example.

In our environment, at present, transmission is practically limited to the months of July, August and September, but malaria as a disease is present throughout the year. Just what can the doctor do to help in this situation? One thing has been mentioned—send blood to the laboratory. If you cannot make good smears we will be glad to help you. A correct smear is the biggest part in a correct diagnosis. What must we do for the patient? The

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biggest thing is to individualize in treatment. In the year 1919 the "standard treatment" was proposed. It is well to get back to the language of the report of the research sub-committee of the National Malaria Committee:

"It is not claimed that this is a perfect or even the best treatment in all cases, but it is our belief that it is a good and satisfactory method for practical use to prevent relapse and transmission to other people." In an attempt to popularize some method or any method, state and local health departments gave to this "standard treatment" all the publicity possible. The public got the idea that this was the last word in the treatment of malaria. The first doubt was created by the disappointing experience in the treatment of soldiers in heavily infested areas. Later, after repressive measures had begun to bear fruit so that, for example, in the city of Memphis, city-bred anophelines had become a rarity, the persistent prevalence of malaria in many instances after intensive, controlled follow-up treatment, was very disheartening.

Studies made in Memphis by the U. S. P. H. S., results reported by Griffiths in Alabama and by the I. H. B. in Lee County, Georgia, are convincing that there is no royal road to success in "sterilizing" patients and that in many places the legitimate field of the practitioner had been invaded by public agencies without showing justifiable results. I want to make a plea for a more balanced partnership. The ultimate course of the malarial patient is not a rule-of-thumb affair. It calls for the ripe judgment of a well informed practitioner. The doctor who can achieve the largest proportion of permanent cures will be best able to convince the public that in the end it is cheaper to leave the treatment of the disease to the medical profession. Patients who cannot be reached through the doctor will naturally remain public health charges.

What are the objectives in the treatment of malaria?

We must take into consideration the prevention of the attack, the clinical cure, the

removal of the gametes and the prevention of the relapse. Since the late war there has been much said about the hopelessness of the relapsing patient. Under war conditions in the stress of service and after constant reinfection, not better than twenty per cent were cured after each course of many weeks. In our environment we have the parallel in the poor patient. The indigent patient is a physical and financial liability against which there is no satisfactory asset. Poverty and malaria form a vicious circle, each aggravating the other. The situation is much brighter with the well-to-do patient. We bring to our aid a better physical risk, good environment, good food and nursing, rest, avoidance of exposure and a plan of treatment in accordance with modern pharmacological research.

For the after treatment, if the patient can be induced to continue taking, say fifteen grains of quinin sulphate daily for three weeks, it will be a fairly effective compromise with the standard treatment, and one that will perhaps be more faithfully carried out. But as a rule, the relapsing patient will require some arsenic, some more, others less. Relapsing malaria is, after all, only a weak sister to our old enemy, "chronic malarial cachexia." Arsphenamin and stovarsol are useful as adjuvants only and perhaps not much better than Fowler's solution. There have been deaths from arsphenamin when used alone in heavy infection with malaria. It controls clinical tertian malaria and acts as a dangerous provocative in estivo-autumnal malaria. Stephens recommends week-end full doses of quinin, interspersed with courses of arsenic, as the best of many methods tried. Whatever course is pursued, the patient should be instructed to report for another course of treatment as soon as premonitory symptoms appear. At the Memphis General Hospital provocatives have been used following cessation of the fever. The results appear to be encouraging.

As to the mode of administration of quinin, absorption from the stomach is neg-

ligible. Soluble salts or quinin in solution are therefore not necessary. In these forms quinine is a violent irritant of the gastric mucosa and is responsible for most of the quinine intolerance. Quinin is readily absorbed by the mesenteric vessels, even when given in the form of alkaloid or euquinin. Nierenstein, on ground of 1,366 assays, has shown that the solubility of the salt or the mode of administration does not materially influence the rate of excretion in the urine, which is our only index of absorption. If the patient vomits or purges there can be no absorption. If there is coma the quinin cannot be swallowed. In either case resort must be had to the needle, always bearing in mind that in one minute after intravenous injection ninety per cent of the quinin will have disappeared from the plasma. Intravenous treatment by a potent and blood-coagulating drug is not always without danger. As soon as the drug can be given orally, the intravenous method should be discontinued.

As to the fourth method of Carter, I find it embarrassing to dissent from an authority so eminent, so loveable and so loved as the late Dr. Carter. In intensely malarious districts, as was the case in the Canal Zone when Carter was there, quinin prophylaxis is a choice of evils, but here and now it is out of place. It is productive of symptomless malaria. It produces the very condition we are trying to avert. Recent studies upon paretics treated with malaria have shown that it is not possible to prevent malaria by giving quinin before, with or during the first days of infection. Similar results are shown in experimental bird malaria. Yorke assumes that quinin acts by mobilizing antibodies and that this is all there is to the effect of quinin. Unless enough antigen is available, quinin has nothing to work upon. Quinin added to malarial blood in a dilution of 1:10,000 will not prevent infection. The best we can get by any method of administration is 1:100,000 for a short time. For these reasons we now advocate awaiting premonitory symptoms before beginning treatment.

Quinin fastness. It has been shown that

under certain conditions quinin is ineffective. If the patient's defensive forces are in abeyance, quinin alone cannot cure. No specific therapy can be successful without the aid of the natural defenses of the body. Complete sterilization will always have to be accomplished by what is known as vital resistance. Fletcher claims that this is all there is to quinin fastness, provided the drug has actually been swallowed. Testing the urine with Mayer's reagent shows that the drug is always absorbed if taken. It is a good method of checking up on the patient, and without this test no one can legitimately claim that quinin-fastness exists. Excessive doses of quinin produce albuminuria. In testing for alkaloid the urine should be boiled and filtered before applying the test.

I think this resume makes out a strong case against relapses in malaria. I hope it has been shown that the practicing physician is the all-important factor in the situation. He is the pivot man in the ultimate control of malaria. I want to plead for a more extensive use of the laboratory and for more attention to modern scientific pharmacology in the treatment of the relapsing patient.

I think the objective has been definitely outlined and the methods discussed. We as a profession must direct our energies toward achievement. If this paper has been a stimulus the writer shall feel amply compensated.

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DISCUSSION

DR. J. W. SANFORD, Ripley: A number of years ago, I think it was in 1886, a German writer gave heroic doses just as the patient began to sweat. His dose was forty grains. I had a patient who had been having malaria for seven years without any control. He lived at Fort Creek, a great malaria country, opposite the Delta. He had high temperature. I gave him sixty grains of quinin in one dose. That man lived for fourteen years without having another chill. I have given as high as thirty grains hypodermically just as they are beginning to sweat. That is the time to catch the germ. This German scientist was sent to Africa from Germany. I have found in all stages if you can get quinin enough in them hypodermically you can control it. There is no necessity of giving these strong solutions of quinin in the veins. Ultimately the medical profession will have a number of serious heart lesions to contend with if they continue to give quinin intravenously. You can give it and get by with it, but what will be the result? The medical profession has gone crazy about "shots." They "shoot" everything. They stick everything into the vein. God gave us mouths to take medicine by.

DR. M. G. SPINGARN, Memphis: I do not want to discuss Dr. Krauss' paper because I do not know enough about malaria, but I stand in front of you as one of the victims of malaria, having taken seventy-five doses of quinin hypodermically, twenty-five to thirty-five grains to the dose. I want to say that even in the face of those doses I still had the recurrences of temperature regularly. I did not get rid of the malaria until I went into the army. I had one experience with intravenous quinin and I do not want any more. The patient died before I got the needle out.

DR. I. G. DUNCAN, Memphis: I want to emphasize one point Dr. Krauss brought out, that was the laboratory diagnosis of malaria. Lots of these patients have chills and temperature which are not malaria. A doctor came to see me who had been treating himself for malaria for a long time without results. After a careful examination we found he had a gonorrheal prostatitis and after a little treatment he was all right.

OCULAR DISEASES OF DENTAL ORIGIN*

HERSCHEL EZELL, M.D., Nashville, Tenn.

EYE diseases of dental origin are far more common than are generally supposed. The ophthalmologist who is careful to determine the etiology of his inflammatory eye diseases will attest that it is surprising to note the number of cases that are associated with, and are due to, abscesses at the apices of the teeth.

A discussion of this subject might impress some of you as being elementary in view of the fact that so much has been written upon the subject of focal infection, and that we now attribute so many diseases to bad teeth. I fear, however, that we often neglect to examine the teeth as a cause of many of our eye diseases, although it has long been known that dental diseases, suppurative processes in particular, are productive of ocular symptoms. If this paper will cause us to keep in mind the teeth as a frequent cause of inflammatory eye diseases it will have accomplished its purpose.

To enjoy a proper conception of the reason why diseased teeth play such an important role in the etiology of inflammatory ocular diseases it will be necessary for us to consider the manner by which the infection is transmitted to the eye. It has been my observation that the dental infection is usually on the same side as the affected eye. This has been the observation of many other ophthalmologists. In a report of fifty-three cases covering two years of oculo-dental work at the Herman Knapp Memorial Eye Hospital in 1918, Steinbugler, Levy and Pease report that fifty-two of the fifty-three patients studied showed infection on the same side as the affected eye.

This would lead to the belief that infection does not occur through the blood

stream in every case, otherwise it would seem that more cases would have been noted in which dental infection was present on the opposite side to the affected eye. It is logical, therefore, to conclude that dental infection is carried, in most instances, either by means of the lymphatics or through the osseous channels.

The streptococcus viridans is the organism most frequently found in cultures from tooth roots and sockets and is the principal etiologic factor. Other organisms found are the staphylococcus, pneumococcus and bacillus pyocyaneus. In acute cases a mixed infection is the rule, the streptococcus viridans being most often associated with the staphylococcus and in chronic cases the viridans alone is common.

It would seem, from a review of the literature, that no part of the eye is immune to diseases of dental origin. The uveal tract or the middle coat is the most frequent ocular structure involved. We may have ulcer of the cornea, keratitis, iritis, cyclitis, retinitis, choroiditis, detachment of the retina, neuritis, episcleritis, abscess of the lids, orbital cellulitis or, in fact, every tissue of the eye may be involved. These diseases may occur in either acute or chronic form.

Blind dental abscesses seem to be the most common cause of inflammatory eye diseases. McGuire reports that seventy-five per cent of his cases were due to small root abscesses not discoverable until x-rays were employed. The same author reports that in most cases of general oral sepsis and pyorrhea which have existed for a long time without causing eye trouble the sudden development of an apical abscess has often proved to be the exciting cause of an ocular lesion.

Crowned teeth are frequent offenders in the production of inflammatory states of

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the eye and should always be regarded with suspicion. Roentgenograms of these teeth often reveal apical abscesses. It is my opinion, however, that in every investigation for focal infection in the dental region all the teeth should be x-rayed. Abscessed teeth are sometimes found that were not suspected.

Reflex ocular disturbances, headaches and even paralysis of extra ocular muscles may arise from impacted third molars. Dr. Dutrow reports a case of a man twenty-two years of age who had complete paralysis of the left external rectus muscle and who was relieved after the extraction of his impacted molars.

That pyorrhea alveolaris is a frequent source of eye lesions is borne out by many writers. The great prevalence of this disease and that the infection in such cases is direct into the circulation makes it a big factor to be contended with. This is regarded by some authorities as the most frequent source of toxemic iritis (Beaumont). Lang reports that sixty-four per cent of the cases of iritis due to sepsis are caused by Riggs' disease. Beaumont says that drastic treatment is warranted in these cases, and if necessary all foci of disease should be removed by the extraction of the offending teeth.

There are many remedies for pyorrhea, but I am of the opinion that the most effective one is removal of the teeth. I have observed many cases of pyorrhea treated with different antiseptics, etc., but I have yet to see one of them get well, and sooner or later the teeth would have to be extracted.

It is the specialist's duty I think to examine the teeth of all of his patients for dental pathology, and if the teeth are at all suspicious he should refer the patient to his dentist. I do not think that it is within the specialist's right to order the removal of teeth, but merely to advise his patient to seek his dentist's advice, with the suggestion that the questionable teeth may have to be removed.

My patients are classified from a dental standpoint as follows:

First. Cases wherein it is manifest that the teeth are normal.

Second. Cases that are plainly pathological.

Third. Questionable cases.

I believe that all plainly pathological and questionable cases should be referred to the dentist and possibly some of the apparently normal ones. These cases should be urged to have their teeth put in good condition regardless of their ocular findings. Without a thorough investigation one will not know whether or not the teeth have any bearing upon any existing eye disease. Frequently it will be found that the teeth are the source of the infection, and if they are not no harm will have been done by an examination.

In searching the mouth for foci of infection the value of roentgenology is apparent. The x-ray has brought abscessed teeth within our view and given up information that otherwise would not have been obtained. It is not wise to condemn unreservedly all dead teeth, and the x-ray furnishes us with dependable means of knowing those unoffending teeth of this type. Often vital teeth will show pyorrhea pockets that will go unsuspected without a picture. On the other hand a negative roentgenogram of simply suspected teeth is not sufficient to exclude dental sepsis.

We have, at times, heard much criticism of a few doctors who unreservedly condemn teeth. This is more likely to happen when roentgenological examinations are not made, or to their disbelief in the value of pictures. There is no legitimate excuse for this practice. Furthermore, if all dental films were passed upon by the dentist as they should be, this mistake would seldom occur. I do not mean just any dentist, but a competent dentist, one who is able to make and interpret his pictures. The proper interpretation of all x-rays should be our aim. Under no circumstances should teeth be needlessly sacrificed, but when all evidence points to the teeth as being the source of the infection they should be given immediate attention.

As Dr. Beaumont has said, "It is better to lose thirty-two teeth than one eye."

The removal of the teeth should be followed by a thorough search for granuloma or necrotic bone in the area from which they were removed. Simple curettment is advised for the less extreme cases, while more radical surgical procedures may be necessary for the removal of diffuse areas of necrotic bone. Not only should necrosed bone be removed, but all splinters of bone as well, as these may give rise to abscesses later on and delayed healing.

The toothless dental field or area where teeth once existed and have long since been removed may be a prolific source of virulent bacteria. This condition is the result of simple extraction of septic teeth without attention to the tooth sockets and incomplete eradication of the infected area, as was just referred to. Dr. W. H. Shutz has recently reported three cases of iritis and choroiditis, where infected foci were found around missing teeth, all ocular activity subsiding after thorough surgical removal of the infected dental area.

The following are a few cases of eye diseases due to dental infection that have come under my observation within the past twelve or eighteen months:

Miss L. L., age 21 years, referred to me by Dr. W. D. Sumpter, March 17, 1925, complaining of headache and pain in the right eye radiating towards the right temple. The patient stated that she had had this pain for three or four days, and had been having these attacks every few weeks for some time. A thorough examination of the throat, nose, ears and eyes showed no pathology. The vision was 20/20 and the eye grounds showed no change. I suggested that this pain might be due to impacted teeth and the patient was referred to her dentist, Dr. J. T. Meadors. Dr. Meadors x-rayed her teeth and found that she had two upper impacted third molars. The impacted teeth were removed and the patient's symptoms disappeared. This was a case of reflex ocular disturbance due to impacted third molars.

Mr. G. W., age 42 years, a clerk, came to me January 10, 1925, with abscesses in his right upper eye lid and inflammation of both eyes. The lid was inflamed one month previously. About the time the eye trouble began he noticed that his teeth were giving him trouble. They were x-rayed and several were found abscessed. These teeth were removed and at once the eye began to improve. At this time the patient's eyes are entirely normal.

Mr. L. L., age 20 (?) years, came to me June 9, 1925, complaining of imperfect vision and a red and inflamed right eye. Examination of the

eye revealed a slightly contracted and sluggish pupil. The iris was muddy in color; the vision was 20/30, or sixty-six per cent of normal. Atropine was instilled into the eye and the pupil dilated slowly and unevenly. The vitreous and fundus were normal. A diagnosis of iritis was made. An effort was made to determine the cause of the iritis. The nose and throat were normal. Wassermann and urinalysis were negative. The only source of infection that could be found was an abscessed tooth that was x-rayed and removed by Dr. W. J. Tichenor. Under atropine the eye cleared rapidly and on July 1, 1925, the patient was entirely relieved and dismissed well.

Mr. Wm. K., age 24 years, of Chicago, Ill., came to me August 10, 1925, complaining of impaired vision in both eyes. The eyes were red and inflamed and there was photophobia and lachrymation. This gentleman was in Nashville on a visit and it was one of his friends who brought him to my office. He had bilateral iritis. The patient told me that he had been treated for iritis by his specialist in Chicago for two or three weeks before coming to Nashville. No cause could be found for the iritis except a very foul mouth, with six or seven abscessed teeth. The patient was referred to Dr. B. K. Bowen, who advised the removal of these teeth, advising that it was not necessary to x-ray them. This patient had the utmost faith in his Chicago ophthalmologist and returned there immediately for consultation. On October 2 I received a message from him stating that after the teeth were removed the eyes began to improve and were much better. On January 24 I received another letter stating that he could see as good as any one and that he had not had any further trouble. He correctly attributes his recovery to the removal of his teeth.

Mr. G. L., age 44 years, a farmer's wife, came to me March 19, 1924, complaining of poor vision and one or two floating opacities in the right eye. Examination revealed the vision 20/40, or about fifty per cent of normal. Normal pupillary reaction and no fundus changes. With a strong convex lens +12 D.S. in the ophthalmoscope one large and one small floating opacity could be seen in the vitreous anteriorly. The tension of the eye was normal, and Wasserman and urinalysis were negative. The patient's tonsils were small and contained no pus. The only focus of infection that could be found was two abscessed right first and second upper molars. These teeth were removed by her dentist in Franklin, Tennessee, who reported that they were both abscessed. Four or five days later when I saw the patient she was much improved. The vision was 20/30 and the opacities were not so dense and were more scattered. The atropine solution, locally, for the eyes was continued and was the only medicine used. The patient made weekly visits to my office until about the sixth week after the extraction. The opacities were absorbed and the patient's vision returned to normal. I was convinced that the eye trouble, in this case, was due to the abscessed teeth.

Mr. B. O., age 42 years, a telegraph operator, was referred to me by Dr. Albert Sullivan, March 17, 1926, complaining of pain, redness and impaired vision in his right eye of four or five days duration. This man stated that he had had iritis in this eye in 1917. He has never had rheumatism, but has had some very bad teeth. Examination showed pupil contracted, iris of a muddy color, with considerable exudate in the pupil and

on the edge of the iris. The vision equaled perception of light only. The left eye was normal. There was no history of lues or tuberculosis. Wasserman was negative and the most likely cause of the iritis was several abscessed teeth. The patient was referred to Dr. George Seeman, who removed nine abscessed teeth, five of which were on the right side, three above and two below. From the outset atropine was instilled into the eye and after three or four days the pupil dilated fully. The patient was first seen on March 17 and although treatment was instituted at once he improved very little until the teeth were removed. After this the eye cleared rapidly and on April 10 the eye was entirely normal with 20/20 vision when he was dismissed.

In conclusion, I want to stress the following points:

First. The importance of a thorough dental examination in searching for the cause of inflammatory eye diseases.

Second. That the diseased teeth are usually found on the same side as the eye lesion.

Third. The importance of roentgenograms of the teeth.

Fourth. That these x-rays should be made by the dentist and studied with him.

Fifth. That dental infection is probably a more frequent cause of eye disease than is commonly expected.

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THE JOURNAL

OF THE

TENNESSEE STATE MEDICAL ASSOCIATION

Devoted to the interests of the Medical Profession of Tennessee

Office of Publication, 420 Jackson Bldg., Nashville, Tenn.

J. F. GALLAGHER, M.D. -----Editor

JUNE, 1926

CONSECRATIO MEDICI

Taking the above caption as his theme in the commencement address to the graduating class of the Jefferson Medical College, Dr. Harvey Cushing, of Boston, one of America's premier surgeons, a pioneer in his chosen specialty, an erudite scholar and gifted teacher, delivered a message worthy to be heard and pondered over by all who are interested in medical education and the future of our profession.

The path of science is always fraught with innumerable problems and unending tasks, and these multiply amazingly under the influence of rapid progress.

In their enthusiasm and eagerness to be the standard bearers of advancement, workers not infrequently suffer a distortion of perspective and lose their sense of proportion, thereby giving rise to what might be properly called the by-products of science. This, among other things, makes truth elusive.

What has been said is particularly true of medicine, although it has made more progress in the last few decades than in all its former history.

Science or knowledge properly evolved should serve at least two ends: first, to so benefit mankind that the utmost may be achieved by the living; and second, it must find a means for its own continuation and advancement.

In medicine the chief burden of the latter function rests on the various types of medical schools. A great diversity of opinion has always existed with reference

to the best methods for instructing the neophyte. The old order of medical teaching which has brought forth such a rich and abundant harvest, is now giving way to a new order of things in which the relationship between doctor and patient is not so much emphasized as that of research.

Now that undergraduate medical students are being instructed in the high art of research before they have learned to search, we may confidently look forward to the near future when infants will be taught to sing before they can talk.

In America, at the present time, a small group of medical schools richly endowed with the sinews of war, if not with practical experience, has been precipitated into the vivisectionarium in which the vivisectionists, undisturbed by any thought of the morrow, and aloof from their professional contemporaries contending with mere mortals, calmly proceed with the fascinating study of: Why are medical schools?

Dr. Cushing sheds a calm, judicious and dispassionate light upon this curious phenomenon which will enable those with ears to hear and those with eyes to see.

H. M. T.

MEMBERSHIP LIST

In this issue of the Journal will be found a list of the officers and committees as well as the roster of the membership of the State Society by counties. Attention is called to this fact for the reason that numerous requests are received at this office for a list of members of the county medical societies. The officers of the county societies are noted in the list in every instance in which this information has been given the Secretary. It is to be hoped members will preserve this issue for their convenience and use.

The members of the various committees, who have heretofore been notified by letter of their appointment, are especially urged to look over the list of committees and ascertain who their fellow-workers are.

DEATHS

Dr. George W. Crosthwait, of Murfreesboro, aged 79, died May 31. Dr. Crosthwait was a graduate of the University of Louisville, School of Medicine, in the class of 1870, and a member of the Rutherford County Medical Society at the time of his death.

Dr. J. W. Sanford, of Ripley, aged 64, died June 25. Dr. Sanford was a graduate of the Memphis Hospital Medical College in the class of 1886 and a member of the Lauderdale County Medical Society.

NEWS NOTES AND COMMENT

Drs. J. R. Bone, Bernard Gaston, B. S. Rhea and C. W. Huffman have moved their offices into the McClain & Smith building, Lebanon's newest office building.

Dr. Watt Yeiser delivered the commencement address to the graduating class at the exercises of the King's Daughters Hospital of Columbia.

Dr. John J. Shea, of Memphis, was recently elected one of the vice-presidents of the American Laryngological, Rhinological and Otological Society at its meeting which was held in Detroit.

Dr. Herbert Acuff, of Knoxville, was recently elected international president of Civitan Clubs at the annual convention in Philadelphia.

A group of physicians residing in Rutherford County met recently and or-

ganized the Stone's River Academy of Medicine. Meetings will be held on the second Wednesday of each month. The scientific program, which is now in preparation, will be preceded by a luncheon. The following were present and became charter members of the Academy: Drs. V. S. Campbell, R. M. White, J. C. Overall, J. R. Gott, W. T. Robinson, J. C. Kelton, J. M. Shipp, A. J. Jamison, M. B. Murfree, J. F. Adams, S. W. Williams, J. A. Scott and J. I. Waring. Election of officers resulted in the selection of Dr. J. C. Overall, president; Dr. J. M. Shipp, vice-president, and Dr. J. I. Waring, secretary-treasurer.

MEDICAL SOCIETIES

The thirty-fifth annual convention of the West Tennessee Medical and Surgical Association came to a close Friday, May 28, with the election of Dr. R. M. Little, of Martin, as president; Dr. W. L. Duckworth, of Jackson, as vice-president, and the reelection of Dr. L. A. McSwain, of Paris, as secretary. Dyersburg was chosen as the next meeting place, the date to be in May of next year.

Roane County physicians were hosts to a tri-county medical meeting held at Kingston, June 15, with twenty-eight doctors from Monroe, Loudon and Roane counties. Roane County Association, presided at the meeting, and Dr. S. R. Miller, of Knoxville, present. Dr. J. C. Fly, president of the the guest of honor, read a paper on "The Progress in Medical Organization, Its Advantages to the People and to the Profession." The next meeting will be held at Sweetwater, July 15.

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Robinson, G. C.-----Vand. School of Med., Nashville

Ross, S. T.-----142 7th Ave., N., Nashville

Rucks, B. T.-----Bennie-Dillon Bldg., Nashville

Sanders, E. M.-----1922 Church St., Nashville

Savage, G. C.-----165 8th Ave., N., Nashville

Sayers, E. A.-----Jackson Bldg., Nashville

Seeman, Geo. F.-----Lambuth Bldg., Nashville

Seward, W. C.-----Jackson Bldg., Nashville

Sharber, A. L.-----Jackson Bldg., Nashville

Shofner, N. S.-----Lambuth Bldg., Nashville

Shoulders, H. H.-----Lambuth Bldg., Nashville

Shoulders, H. S.-----Lambuth Bldg., Nashville

Simons, Irving-----149 6th Ave., N., Nashville

Smith, C. M.-----Vanderbilt Hospital, Nashville

Smith, H. C.-----St. Thomas Hospital, Nashville

Spitz, Herman-----Lambuth Bldg., Nashville

Stevens, J. W.-----City View Sanitarium, Nashville

Sullivan, C. C.-----155 8th Ave., N., Nashville

Sullivan, Robert-----Lambuth Bldg., Nashville

Sullivan, W. A.-----Jackson Bldg., Nashville

Sumpter, W. D.-----155 8th Ave., N., Nashville

Sutherland, E. A.-----Madison, Tenn.

Sutton, J. G.-----Cedar Grove, N. J.

Tanksley, W. H.-----Vendome Bldg., Nashville

Tarpley, J. R.-----Lambuth Bldg., Nashville

Teachout, S. R.-----2012 West End, Nashville

Thach, A. B.-----151 7th Ave., N., Nashville

Tharp, Milton-----Vendome Bldg., Nashville

Tigert, H. M.-----142 7th Ave., N., Nashville

Tucker, Harlin-----Vendome Bldg., Nashville

Tucker, R. O.-----Vendome Bldg., Nashville

Warner, R. J.-----Lambuth Bldg., Nashville

Watkins, J. T.-----142 7th Ave., N., Nashville

West, Olin-----535 N. Dearborn St., Chicago, Ill.

Whitfield, T. A.-----Jackson Bldg., Nashville

Wilkerson, W. W., Jr.-----Vendome Bldg., Nashville

Wilson, O. H.-----Lambuth Bldg., Nashville

Winter, W. C.-----U. S. Veteran Hospital, Fort Lyon, Colo.

Witherspoon, J. A.-----Lambuth Bldg., Nashville

Witherspoon, Jack-----Lambuth Bldg., Nashville

Witt, W. H.-----Lambuth Bldg., Nashville

Wood, Hilliard-----Ind. Life Bldg., Nashville

Wyatt, R. E.-----805 Monroe St., Nashville

Young, T. Hugh-----Vendome Bldg., Nashville

Zerfoss, Kate Savage-----165 8th Ave., N., Nashville

Zerfoss, T. B.-----165 8th Ave., N., Nashville

DECATUR COUNTY

Bray, F. J.-----Parsons

Huffstedler, A. G.-----Parsons

Ingram, J. E.-----Parsons

McMillan, J. G.-----Decaturville

McMillan, J. L., Secretary-----Decaturville

Rogers, Tavern, President-----Decaturville

DICKSON COUNTY

Beasley, R. P.-----Dickson

Binkley, D. C. K.-----Denver, R. F. D. No. 1

Coke, T. H.-----Denver, R. F. D. No. 1

Cooley, J. T.-----Waverly

Cunningham, W. M.-----Cumberland Furnace

Daniel, W. H.-----McEwen

Davis, Carrie Chase-----Waverly

Dickson, A. C.-----VanLeer

Frost, J. W.-----Lobelville

Gould, D. T.-----Waverly

Guerin, J. C.-----Slayden

Hunt, J. F.-----Tennessee City

Loggins, L. F.-----Charlotte

Mathis, J. E.-----Burns

McCrary, Joe-----McEwen, R. F. D.

Slayden, W. W., Secretary-----Waverly

Spencer, H. P.-----White Bluff

Smith, J. N.-----Cuba Landing

Sugg, J. A.-----McEwen

Sugg, W. J.-----Dickson

Teas, J. J.-----Waverly

Walker, B. F.-----Dickson

Walker, W. W.-----Dickson

Wall, J. Y.-----Waverly

Weaver, Hartwell-----Dickson

DYER COUNTY

Austin, D. T.-----Miston

Baird, E. H.-----Dyersburg

Baird, J. P.-----Dyersburg

Brewer, J. D., President-----Dyersburg

Cherry, E. O.-----Newbern

Edwards, Luther-----Finley

Fowlkes, J. A.-----Dyersburg

Freeman, J. T.-----Finley

Haskins, E. T.-----Newbern

Holland, W. W.-----Dyersburg

Marr, B. G.-----Dyersburg

Motley, Lyle, Secretary-----Dyersburg

Price, J. G.-----Dyersburg

Shelton, W. G.-----Lavaye, Wyo.

Sullivan, W. O.-----Newbern

Walker, N. S.-----Dyersburg

Ward, R. H.-----Fowlkes

Watson, W. P.-----Dyersburg

Wynne, J. W.-----Newbern

FAYETTE COUNTY

McAuley, L. D.-----Oakland

Morris, John W.-----Somerville

GIBSON COUNTY

Bennett, B. T.-----Trenton

Bryant, G. C.-----Milan

Caldwell, B. D.-----Milan

Caldwell, S. E.-----Milan

Harper, T. M.-----Milan

Ingram, M. D.-----Eaton

Jackson, John-----Dyer

Keeton, W. B.-----Medina

Medling, W. L.-----Dyer

McRee, W. C.-----Trenton

Moore, J. C.-----Trenton

Oliver, G. W.-----Medina

Ousler, J. W.-----Humboldt

Penn, B. S.-----Humboldt

Roberts, F. L.-----Trenton

Rozzell, J. H.-----Gibson

Spangler, Geo. E., Secretary-----Humboldt

Tyree, C. E.-----Trenton

Walker, S. E.-----Trenton

-----U. S. Vet. Hospital No. 67, Kansas City, Mo.

GILES COUNTY

Abernathy, C. A.-----Pulaski

Allen, A. M.-----Buford

Baugh, John E.-----Elkton

Blackburn, Jas. K., President-----Pulaski

Butler, G. D.-----Pulaski
 Cole, W. H.-----Minor Hill
 Copeland, W. F.-----Campbellsville
 Deane, A. W.-----Pulaski
 Edmondson, L. A.-----Bethel
 Fuqua, E. M.-----Pulaski
 Gaines, F. C.-----Pulaski, R. F. D. No. 1
 Harwell, Wm. S.-----Frankewing
 Hulme, F. B.-----Pulaski
 Johnson, W. J.-----Pulaski
 Lancaster, A. J.-----Pulaski, R. F. D. No. 5
 Lancaster, G. W.-----Pulaski, R. F. D. No. 5
 LaRue, J. A., Secretary-----Pulaski
 Mims, W. S.-----Frankewing
 Morris, J. H.-----Pulaski
 Smith, M.-----Ardmore
 Waits, G. K.-----Minor Hill
 Waldrop, J. G.-----Lewisburg
 Warren, R. E.-----Pulaski
 Wright, J. B.-----Lynnville

GREENE COUNTY

Blanton, M. A., Secretary-----Mosheim
 Bremley, S. T.-----Greeneville
 Bright, W. M.-----Chuckey
 Britton, F. C.-----Greeneville
 Campbell, J. T.-----Greeneville
 Coolidge, L. E.-----Greeneville
 Dyer, L. E., President-----Greeneville
 Fox, C. P.-----Greeneville
 Fox, C. P., Jr.-----Greeneville
 Huffaker, R. O.-----Greeneville
 Keller, R. D.-----Greeneville
 Mathis, W. T.-----Greeneville
 Simpson, H. A.-----Afton
 Woodyard, S. W.-----Greeneville

HAMILTON COUNTY

Abernathy, Y. L.-----Bayutan Terrace, Chattanooga
 Alder, G. B.-----Volunteer Bldg., Chattanooga
 Anderson, E. B.-----Hamilton Bank Bldg., Chattanooga
 Anderson, E. C.-----726 1/2 Market St., Chattanooga
 Anderson, W. D.-----James Bldg., Chattanooga
 Anderson, W. E.-----James Bldg., Chattanooga
 Armstrong, J. J.-----707 Walnut St., Chattanooga
 Barrett, S. H.-----Provident Bldg., Chattanooga
 Bibb, Jas. L.-----Provident Bldg., Chattanooga
 Blackwell, L. P.-----James Bldg., Chattanooga
 Bobo, J. S.-----Palmer, Tenn.
 Bogart, F. B.-----Erlanger Hospital, Chattanooga
 Bogart, W. G.-----518 Georgia Ave., Chattanooga
 Bogart, W. M.-----Frasier & Forrest, Chattanooga
 Brooks, J. C.-----Volunteer Bldg., Chattanooga
 Brooks, L. P.-----James Bldg., Chattanooga
 Broyles, A. C.-----Dayton, Tenn.
 Broyles, J. M.-----East Lake, Chattanooga
 Bryan, W. E.-----Provident Bldg., Chattanooga
 Campbell, E. R.-----Newell & Newell San., Chattanooga
 Colemore, R. M.-----Volunteer Bldg., Chattanooga
 Crittenden, C. B.-----City Hall, Chattanooga
 Crowell, T. C.-----Volunteer Bldg., Chattanooga
 Davis, T. Lyle-----Volunteer Bldg., Chattanooga
 Dennis, J. W.-----Courthouse, Chattanooga
 Dickey, W. W.-----Volunteer Bldg., Chattanooga
 Earle, J. R.-----James Bldg., Chattanooga
 Ebert, A. F.-----Volunteer Bldg., Chattanooga
 Eldridge, J. E.-----3 Hogshead Apt., Chattanooga
 Ellis, G. Manning-----Volunteer Bldg., Chattanooga
 Fancher, H. L.-----Provident Bldg., Chattanooga
 Fletcher, H. Quigg-----James Bldg., Chattanooga
 Fowler, S. A.-----260 Cowart St., Chattanooga
 Funderburk, N. A.-----Pine Breeze Sanitarium, Chattanooga
 Frere, J. M.-----Newell & Newell San., Chattanooga

Gilbert, E. A.-----Provident Bldg., Chattanooga
 Gurney, C. H.-----Rossville, Ga.
 Hampton, H. H.-----2 Hogshead Apt., Chattanooga
 Harrison, E. M.-----Volunteer Bldg., Chattanooga
 Haskins, J. B.-----Volunteer Bldg., Chattanooga
 Haymore, G. P.-----2 Hogshead Apt., Chattanooga
 Hillas, W. J.-----Volunteer Bldg., Chattanooga
 Hogshead, J. McChesney-----Hogshead Apt., Chattanooga
 Holman, J. H.-----670 Georgia Ave., Chattanooga
 Holtzclaw, C.-----213 East 8th St., Chattanooga
 Hughes, O. G.-----Ooltewah, Tenn.
 Irish, W. R.-----South Pittsburg, Tenn.
 Jacobs, B. L.-----Provident Bldg., Chattanooga
 Jenkins, E. L.-----Soddy, Tenn.
 Johnson, J. F.-----Provident Bldg., Chattanooga
 Johnson, J. L.-----Volunteer Bldg., Chattanooga
 Johnson, J. Paul-----Volunteer Bldg., Chattanooga
 Johnson, J. W.-----Volunteer Bldg., Chattanooga
 Kirkpatrick, J. W.-----Richard City, Tenn.
 Larrimore, H. P.-----Volunteer Bldg., Chattanooga
 Laws, Hiram-----Provident Bldg., Chattanooga
 Lawwill, Stewart-----Provident Bldg., Chattanooga
 Lindsey, W. E.-----3 Hogshead Apt., Chattanooga
 Long, S. H.-----Volunteer Bldg., Chattanooga
 Macquillan, J. W.-----Hamilton Bank Bldg., Chattanooga
 Magee, E. H.-----Provident Bldg., Chattanooga
 Marchbanks, S. S., President-----Volunteer Bldg., Chattanooga
 Martinson, M. M.-----Algona, Arizona
 Martinson, S. C.-----Algona, Arizona
 McGehee, J. B.-----224 1/2 E. Main St., Chattanooga
 McIntosh, S. F.-----Provident Bldg., Chattanooga
 McIsaac, F. C.-----Volunteer Bldg., Chattanooga
 McPheeters, J. D. L.-----Volunteer Bldg., Chattanooga
 Meacham, M. A.-----Hamilton Bank Bldg., Chattanooga
 Moffitt, J. A.-----Van Deman Bldg., Chattanooga
 Nelson, J. E.-----Volunteer Bldg., Chattanooga
 Newell, E. Dunbar-----Newell & Newell San., Chattanooga
 Newell, E. T.-----Newell & Newell San., Chattanooga
 Patterson, A. M.-----Provident Bldg., Chattanooga
 Patton, E. W.-----Hamilton B'k Bldg., Chattanooga
 Reisman, E. E.-----Provident Bldg., Chattanooga
 Renner, Herman-----Volunteer Bldg., Chattanooga
 Revington, J. H.-----Volunteer Bldg., Chattanooga
 Roberts, G. M.-----Volunteer Bldg., Chattanooga
 Skelton, C. A.-----Volunteer Bldg., Chattanooga
 Stem, L. T.-----Volunteer Bldg., Chattanooga
 Steele, Williard-----Provident Bldg., Chattanooga
 Steele, J. B.-----Volunteer Bldg., Chattanooga
 Shumacker, Leopold-----709 Walnut, Chattanooga
 Stapp, F. B.-----9 1/2 East 88th St., Chattanooga
 Smith, H. F.-----224 1/2 E. Main St., Chattanooga
 Smith, J. A.-----908 Oak St., Chattanooga
 Smith, F. T.-----704 Oak St., Chattanooga
 Taylor, J. H.-----Hamilton B'k Bldg., Chattanooga
 Vaden, W. E.-----Hamilton B'k Bldg., Chattanooga
 Wallace, Raymond-----Provident Bldg., Chattanooga
 Webb, J. M.-----Oltewah, Tenn.
 Wert, B. S.-----Provident Bldg., Chattanooga
 Wert, B. S.-----Providence Bldg., Chattanooga
 West, George R.-----Volunteer Bldg., Chattanooga
 West, Lyle B., Sec.-----Vol. Bldg., Chattanooga
 Willbanks, G. P.-----Rossville, Ga.
 Williams, D. N.-----Volunteer Bldg., Chattanooga
 Williams, G. V.-----Van Deman Bldg., Chattanooga
 Wise, E. B.-----James Bldg., Chattanooga
 Winters, W. P.-----Volunteer Bldg., Chattanooga
 Wood, Sidney H.-----3915 St. Elmo Ave., Chattanooga
 Yarnell, S. I.-----112 1/2 E. 7th St., Chattanooga

HAMBLEN COUNTY

Brock, P. L.-----Morristown
 Campbell, J. F.-----Morristown
 Carroll, C. T.-----Morristown
 Henderson, P. L., President-----Morristown
 Howell, W. E.-----Morristown
 Painter, T. F.-----Morristown
 Pangle, H. G.-----Russellville
 Ryburn, S. M., Secretary-----Morristown
 Shields, D. E.-----Morristown
 Smithers, G. W.-----Rutledge
 Tomlinson, O. R.-----Tate

HARDEMAN COUNTY

Alexander, J. Y.-----Middleton
 Boatman, J. A.-----Middleton
 Cocke, E. W.-----Bolivar
 Miesh, L. A.-----Bolivar
 Phillips, W. S.-----Grand Junction
 Pope, Leon-----Milan
 Siler, W. H., President-----Silterton
 Tate, R. W.-----Bolivar
 Timmons, E. R., Secretary-----Grand Junction
 White, A. W.-----Whiteville

HARDIN COUNTY

Walker, E. B.-----Savannah
 Williams, O. H.-----Savannah

HAWKINS COUNTY

Doty, R. A.-----Rogersville
 Lyons, G. C.-----Surgoinville
 Lyons, J. S., Secretary-----Rogersville
 Lyons, W. C.-----Surgoinville
 Miller, J. E.-----Rogersville
 Patton, E. A., President-----Pressmen's Home
 Swaney, O. M.-----Treadway

HAYWOOD COUNTY

Chambers, John M.-----Brownsville
 Chapman, T. C.-----Brownsville
 Edwards, J. L., Secretary-----Brownsville
 Hess, F. P.-----Brownsville
 Mulherin, G. G., President-----Brownsville
 Poston, W. D.-----Brownsville
 Sorrelle, A. H.-----Brownsville

HENDERSON COUNTY

Arnold, J. M.-----Lexington
 Bolen, C. E.-----Wildersville
 Bradfield, D. W.-----Wildersville
 Brandon, G. A.-----Lexington
 Brazelton, S. H.-----Sardis
 Chaffee, C. B.-----Luray
 Goff, J. F.-----Chesterfield
 Huntsman, W. F.-----Lexington
 Johnson, C. H.-----Lexington
 Joyce, J. P.-----Lexington
 Milam, R. H.-----Lexington
 Parker, S. T.-----Lexington
 Powers, J. E.-----Lexington
 Watson, W. T., Secretary-----Lexington
 Wylie, R. S.-----Scott's Hill

HENRY COUNTY

Abernathy, G. T.-----Paris
 Bomar, J. F.-----Paris
 Burrus, Swan-----Paris
 Fish, R. Graham-----Big Sandy
 McSwain, J. H.-----Paris
 Miller, A. H.-----Paris
 Oliver, A. A.-----Paris
 Paschal, A. F.-----Puryear
 Perry, R. J., President-----Springville
 Scruggs, Elroy-----Paris

Travis, E. A.-----Como
 Wiggins, M. C.-----Paris
 Witherington, R. L., Secretary-----Paris

HICKMAN COUNTY

Beasley, John S.-----Centreville
 Cagle, W. D.-----Centreville
 Edwards, W. K., Secretary-----Centreville
 Prichard, L. T.-----Only
 Stephenson, C. V.-----Centreville
 Webb, J. B., President-----Goodrich

JACKSON COUNTY

Anderson, L. R., President-----Gainsboro
 Gaw, R. C.-----Gainsboro
 McCain, N. M.-----Gainsboro
 Quarles, J. D.-----Whitleyville
 Reeves, C. E., Secretary-----Gainsboro

JEFFERSON COUNTY

Caldwell, T. A.-----Jefferson City
 Cline, Ben E.-----Strawberry Plains
 Dukes, N. M.-----Strawberry Plains
 French, T. R.-----Dandridge
 Huggins, J. I.-----Dandridge
 Tarr, H. L.-----Jefferson City
 Taylor, W. H.-----New Market
 Tinsley, P. A.-----Dandridge
 Tittsworth, B. M., Secretary-----Jefferson City
 Walker, J. H.-----White Pine

KNOX COUNTY

Abercrombie, Eugene-----Acuff Bldg., Knoxville
 Acuff, Herbert-----General Bldg., Knoxville
 Alexander, Eben-----Holston Bank Bldg., Knoxville
 Austin, W. S.-----423 W. Church St., Knoxville
 Barbee, John T.-----Medical Bldg., Knoxville
 Barry, Tom R.-----Medical Bldg., Knoxville
 Black, M. L.-----Holston Bank Bldg., Knoxville
 Blalock, L. O.-----Empire Bldg., Knoxville
 Boies, W. A.-----507 W. Church St., Knoxville
 Bolin, H. J.-----Mascot, Tenn.
 Carmichael, C. J.-----614 Walnut St., Knoxville
 Carroll, H. L.-----Medical Bldg., Knoxville
 Casenburg, S. F.-----Medical Bldg., Knoxville
 Casenburg, W. G.-----1402 N. Broadway, Knoxville
 Cates, B. B.-----508 W. Clinch St., Knoxville
 Catlett, W. A.-----Holston Bank Bldg., Knoxville
 Christenberry, H. E.-----
 -----501 W. Church St., Knoxville
 Christenberry, W. F.-----Lonsdale, Tenn.
 Cochran, Wm. R.-----719 Walnut St., Knoxville
 Copenhaver, K. C.-----Medical Bldg., Knoxville
 Copenhaver, M. M.-----Medical Bldg., Knoxville
 Cross, Wm. R.-----509 W. Church St., Knoxville
 Cunningham, H. K.-----419 W. Church, Knoxville
 Dail, V. C.-----Holston Bank Bldg., Knoxville
 Deaderick, Chalmers-----2420 E. 5th Av., Knoxville
 Delpeuch, Wm.-----818 McGee St., Knoxville
 DePue, R. V.-----503 W. Church St., Knoxville
 DeSautelle, W. T.-----Holston B'k Bldg., Knoxville
 Donahue, R. E.-----Hutson Bldg., Knoxville
 Dorsey, W. F.-----615 Walnut St., Knoxville
 Drake, C. M.-----503 W. Clinch St., Knoxville
 Duggan, S. B.-----4322 Lyons View Pike, Knoxville
 Ellis, J. J.-----Empire Bldg., Knoxville
 Fitzgerald, T. F.-----Knoxville, R. F. D. No. 8
 Ford, Earl-----Devonia, Tenn.
 Ford, E. H.-----Holston Bank Bldg., Knoxville
 Gambill, P. J.-----Knoxville, R. F. D. No. 7
 Garrison, A. R.-----Byington, Tenn.
 Gillespie, S. B.-----Empire Bldg., Knoxville
 Goetz, H. E.-----Medical Bldg., Knoxville
 Greer, J. J.-----611 Walnut St., Knoxville
 Greer, W. A.-----Holston Bank Bldg., Knoxville

Guynes, E. A.-----Medical Bldg., Knoxville
Harrison, B. I.-----705 Walnut St., Knoxville
Haun, L. A.-----Holston Bank Bldg., Knoxville
Henderson, J. D.-----Halston Bank Bldg., Knoxville
Henderson, J. V.-----Holston Bank Bldg., Knoxville
Herrell, M. G.-----Powell Station, Tenn.
Hill, Jesse C., Secretary-----
-----4323 Lyons View Pike, Knoxville
Hill, Oliver W.-----509 W. Church St., Knoxville
Hodge, S. H.-----615 Walnut St., Knoxville
Holloway, V. D.-----609 Walnut St., Knoxville
Howard, B. V.-----501 W. Church St., Knoxville
Jones, C. B.-----Holston Bank Bldg., Knoxville
Jones, Thos. Ap. R.-----605 Walnut, St., Knoxville
Keeling, J. H.-----518 W. Church St., Knoxville
Kennedy, J. M.-----840 N. 4th Ave., Knoxville
Kern, A. G.-----609 Walnut St., Knoxville
Kincaid, J. H.-----421 W. Church St., Knoxville
Kitts, H. L.-----Acuff Bldg., Knoxville
Lyle, A. G.-----City Health Dept., Knoxville
Lane, Vernon C.-----416½ Union Ave., Knoxville
Lancaster, A. Hobart-----Medical Bldg., Knoxville
Layman, R. B.-----Medical Bldg., Knoxville
Lea, J. Marshall-----Medical Bldg., Knoxville
Leach, R. S.-----422 W. Cumberland Ave., Knoxville
Lee, Morton H., President-----Bearden, Tenn.
LeTellier, Forrest S.-----501 W. Church, Knoxville
Long, Henry Clay-----511 W. Church, Knoxville
Lucas, W. A.-----522 W. Church, Knoxville
Luttrell, Walter-----Medical Bldg., Knoxville
Lyons, Joe S.-----101½ S. Gay St., Knoxville
Lynn, W. N.-----215 W. Glenwood, Knoxville
Martin, Carl L.-----Fountain City, Tenn.
MacDonald, DeWitt-----MacDonald Bldg., Knoxville
McCammon, W. C.-----Arnstein Bldg., Knoxville
McCampbell, H. H.-----614 Walnut St., Knoxville
McClain, H. T.-----East Tenn. Bank Bldg., Knoxville
McClain, W. C.-----East Tenn. B'k Bldg., Knoxville
McCrary, R. F.-----705 Market St., Knoxville
McIlwaine, Richard-----419 W. Church, Knoxville
McNabb, P. E.-----
-----M. C. U. S. Army, Washington, D. C.
McReynolds, R. L.-----Holston Bank Bldg., Knoxville
Miller, Carl R.-----Fountain City, Tenn.
Mooney, C. F.-----705 Market St., Knoxville
Monger, Ralph H.-----Medical Bldg., Knoxville
Morrow, J. F.-----605 Walnut St., Knoxville
Nash, Walter S.-----522 W. Church St., Knoxville
Neil, J. B.-----Fretz Bldg., Knoxville
Newman, R. H.-----Acuff Bldg., Knoxville
Ogle, Beecher L.-----Holston Bank Bldg., Knoxville
Oppenheimer, R. P.-----417 W. Church, Knoxville
-----Inskip, Tenn.
Parker, J. B.-----
Patterson, Reese-----Acuff Bldg., Knoxville
Patterson, Robert F.-----Acuff Bldg., Knoxville
Peters, H. D.-----610 Walnut St., Knoxville
Peters, Hugh L.-----201 S. Gay St., Knoxville
Peters, S. B.-----712 Walnut St., Knoxville
Potter, W. W.-----Medical Bldg., Knoxville
Reaves, R. G.-----422 W. Cumberland, Knoxville
Richards, C. E.-----Arnstein Bldg., Knoxville
Ristine, C. E.-----713 Market St., Knoxville
Roberts, M. S.-----Medical Bldg., Knoxville
Rodgers, Olin-----General Bldg., Knoxville
Rule, A. L.-----Medical Bldg., Knoxville
Sheddan, L. L.-----Medical Bldg., Knoxville
Shelton, W. A.-----Acuff Bldg., Knoxville
Smith, Andrew-----Medical Bldg., Knoxville
Smith, Joe T.-----509 W. Church St., Knoxville
Smith, R. E. Lee-----
-----4222 Lyons View Pike, Knoxville
Smith, V. I.-----Hoston Bank Bldg., Knoxville
Stone, G. W.-----Acuff Bldg., Knoxville
Swafford, J. B.-----509 W. Church St., Knoxville
Tadlock, A. B.-----409 E. 5th St., Knoxville

Tappan, R. G.-----Holston Bank Bldg., Knoxville
Thielen, J. B.-----Holston Bank Bldg., Knoxville
Tillery, J. P.-----Holston Bank Bldg., Knoxville
Todd, R. G.-----317½ N. Gay St., Knoxville
Troutt, J. M.-----M. C. U. S. Army, Manila, P. I.
Vandegriff, J. M. J.-----Fountain City, Tenn.
Wallace, W. L.-----1021 N. Broadway, Knoxville
West, J. Q. A.-----710 Walnut St., Knoxville
Wilhelm, Geo. T.-----University of Tenn., Knoxville
Wood, E. G.-----Medical Bldg., Knoxville
Wood, R. B.-----Medical Bldg., Knoxville
Wood, W. P.-----Medical Bldg., Knoxville
Williams, D. H.-----Lyons View Pike, Knoxville
Williamson, G. A.-----Medical Bldg., Knoxville
Wright, M. C.-----Medical Bldg., Knoxville
Young, B. F.-----Bowman Apt., Knoxville
Young, R. M.-----609 Walnut, Knoxville
Zemp, E. R.-----617 Walnut St., Knoxville

LAKE COUNTY

Alexander, J. D., Secretary-----Tiptonville
Alexander, W. S.-----Ridgely
Craffon, J. A.-----Phillippy
Griffin, R. B.-----Daytona Beach, Fla.
Griffin, R. W.-----Tiptonville
Hellen, R. E.-----Ridgely
Hollifield, J. Q.-----
-----Vet. Hospital, Little Rock, Ark.
Jones, J. A.-----Tiptonville
Kelty, E. T.-----Tiptonville
Summers, W. L.-----Ridgely

LAUDERDALE COUNTY

Blankenship, J. C.-----
-----Western State Hospital, Hopkinsville, Ky.
Chapman, S. T.-----Halls
Dunavant, J. L.-----Henning
Glenn, S. M.-----Ripley
Hall, Wm.-----Halls, R. F. D. No. 3
Lackey, J. B.-----Ripley
Lewis, J. R.-----Ripley
Lusk, G. A.-----Ripley
Miller, T. E.-----Ripley
Pipkin, T. F.-----Henning
Sanford, R. B.-----Ripley
Sanford, W. C.-----Ripley
Sanford, W. V., Secretary-----Ripley

LINCOLN COUNTY

Blair, E. K.-----Fayetteville
Bryant, J. D.-----Fayetteville, R. F. D. No. 8
Cannon, W. F.-----Fayetteville
Farrar, J. P.-----Fayetteville, R. F. D. No. 8
Goodner, D. M.-----Fayetteville
Goodrich, C. L., Secretary-----Fayetteville
Graham, J. T.-----Mulberry, R. F. D. No. 1
Hardin, D. T.-----Fayetteville
Holland, E. T.-----Mulberry
Joplin, W. S.-----Petersburg
Maddox, John W.-----Blanche
McWilliams, J. M.-----Fayetteville
Patrick, T. A.-----Fayetteville
Shelton, J. M., President-----Kelso
Sloan, J. E.-----Petersburg
Yearwood, A. L.-----Fayetteville

LOUDON COUNTY

Eblen, J. G., Secretary-----Lenoir City
Hall, G. M.-----Lenoir City
Harrison, J. J.-----Loudon
Leeper, J. T.-----Lenoir City
Padget, W. D., President-----Lenoir City
Robinson, Halbert-----Lenoir City

MACON COUNTY

Allen, M. H.-----LaFayette
 East, Patterson, Secretary-----LaFayette
 Freeman, J. Y., President-----LaFayette
 Howser, D. D.-----LaFayette
 Kerby, A. Y.-----LaFayette
 Tucker, W. W.-----LaFayette

MADISON COUNTY

Anderson, J. G.-----Luray
 Arnold, B. C.-----Jackson
 Arnold, J. M.-----Jackson
 Brasher, G. W.-----Jackson
 Brown, R. S.-----Jackson
 Clark, A. H.-----Jackson
 Cottongim, J. G.-----Bemis
 Crook, J. L.-----Jackson
 Curry, J. M.-----Mercer
 Dancy, A. B.-----Jackson
 Duckworth, W. C.-----Jackson
 Eason, W. B.-----Jackson
 Fields, J. L.-----Jackson
 Pitts, W. T.-----Mayo Clinic, Rochester, Minn.
 Goyer, Earl-----Jackson
 Greer, R. L.-----Oakfield
 Hamilton, F. B.-----Jackson
 Hawkins, Herman-----Jackson
 Hearn, R. S.-----Henderson
 Herron, J. T.-----Jackson
 Herron, S. M.-----Jackson
 Hopper, J. D.-----Jackson
 Jones, G. F.-----Jackson
 Jones, H. L.-----Jackson
 McClaran, J. W.-----Jackson
 Murtaugh, F. M.-----Jackson
 Sanders, W. G.-----Jackson
 Thompson, J. R., Secretary-----Jackson
 Waller, E. E.-----Spring Creek
 Webb, C. F., President-----Jackson
 Webb, H. H.-----Jackson
 Williamson, G. L.-----Jackson

MARSHALL COUNTY

Culbertson, N. H.-----Chapel Hill
 Dryden, D. M.-----Petersburg
 Eatherly, W. T.-----Chapel Hill
 Hardison, C. C.-----Lewisburg
 Hardison, J. A., Secretary-----Lewisburg
 Hardison, S. T.-----Lewisburg
 Marsh, C. P.-----Petersburg
 Moffitt, S. A., President-----Cornersville
 Reed, J. W.-----Belfast
 Sharp, W. T.-----Farmington
 White, Garrett-----Chapel Hill
 White, J. B.-----Lewisburg

MAURY COUNTY

Anderson, H. O.-----Williamsport
 Beasley, M. A.-----Hampshire
 Black, W. E., President-----Columbia
 Cook, M. M.-----Santa Fe
 Covey, J. S.-----Glendale
 Doyle, A. N.-----Carter's Creek
 Edwards, J. A.-----Columbia
 English, G. C.-----Mt. Pleasant
 Faucett, P. H.-----Columbia
 Fowler, C. O.-----Spring Hill
 Gant, H. A.-----Columbia
 Hardison, T. J.-----Carter's Creek
 Jones, J. H.-----Mt. Pleasant
 Kittrell, W. H.-----Mt. Pleasant
 Perry, R. S.-----Columbia
 Pillow, Robert-----Columbia
 Porter, O. J.-----Columbia
 Ragsdale, E. M.-----Santa Fe
 Ragsdale, L. E.-----Donelson
 Sheddan, W. K., Secretary-----Columbia

Walker, M. F.-----Santa Fe
 Walton, C. D.-----Mt. Pleasant
 Webb, W. R.-----Hampshire
 Wilkes, J. W.-----Columbia
 Williamson, G. C.-----Columbia
 Williamson, J. G.-----Columbia
 Woodard, B. H.-----Spring Hill
 Yeiser, Watt-----Columbia

McMINN COUNTY

Akins, E. M., Secretary-----Etowah
 Basinger, J. L.-----Riceville
 Brendle, P. D.-----Englewood
 Brock, R. A.-----Athens
 McClary, S. B.-----Etowah
 McGahhey, Joseph-----Niota
 Moore, W. S.-----Etowah
 Nankiville, J. R., President-----Athens
 Spradling, L. W.-----Athens
 Stanton, G. W.-----Athens
 Taylor, H. F.-----Calhoun

McNAIRY COUNTY

Barnes, W. M.-----Finger
 Curry, J. H.-----Adamsville
 Eason, J. B.-----Leapwood
 Hodges, W. H.-----Finger
 Howell, J. G.-----Corinth, Miss..
 Kendrick, R. M., President-----Selmer
 Sanders, E. G.-----Stantonville
 Sanders, H. C., Secretary-----Selmer
 Smith, E. M.-----Bethel Springs
 Smith, John R.-----Selmer
 Tucker, N. A.-----Finger
 Wallace, W. W.-----Selmer

MORGAN COUNTY

Byrd, Archie, President-----Wartburg
 Carr, J. H.-----Oakdale
 Gallion, W. E., Secretary-----Oakdale
 Jones, S. H.-----Sunbright
 Love, J. F.-----Wartburg

MONROE COUNTY

Arrants, W. H.-----Sweetwater
 Bagwell, B. W.-----Madisonville
 Barnes, L. L., Secretary-----Sweetwater
 Hardin, J. A.-----Sweetwater
 Kimbrough, R. C.-----Madisonville
 Leonard, W. W.-----Tellico Plains
 McClain, W. A.-----Sweetwater
 McCullum, J. A.-----Vonore
 Roberts, T. M.-----Sweetwater
 Rogers, W. A.-----Tellico Plains
 Shearer, H. C.-----Madisonville
 Shearer, M. D.-----Tellico Plains

MONTGOMERY COUNTY

Atkins, O. H.-----Cumberland City
 Brandau, J. W.-----Clarksville
 Cherry, E. M.-----Big Rock
 Edmondson, H. H.-----Clarksville
 Frazier, R. P.-----Neptune
 Graham, R. M.-----Clarksville
 Hughes, M. L., President-----Clarksville
 Hunt, I. E.-----Clarksville
 Keatts, C. A.-----Indian Mound
 LaHiff, J. B.-----Clarksville
 Ledbetter, J. H.-----Clarksville
 Macon, R. B.-----Clarksville
 Malone, F. J.-----Clarksville
 Neblett, L. L.-----Clarksville
 Nesbitt, H. A., Secretary-----Clarksville
 Norris, R. L.-----Palmyra
 Ross, J. W.-----Clarksville
 Runyon, B. F.-----Clarksville
 Runyon, F. J.-----Clarksville
 Shelby, M. L.-----Clarksville

OBION COUNTY

Blanton, M. A.	Union City
Boswell, E. A.	Troy
Carlton, J. D.	Union City
Chambers, Chas. D.	Hornbeak
Glover, Illar	Union City
Latimer, R. G.	Union City
Park, Ira, Secretary	Union City
Prather, P. W.	Woodland Mills
Roland, J. L.	Obion
Roberts, W. F.	Troy
Sharp, K. B.	Union City
Turner, C. B. A.	Union City
Walker, J. C.	Obion
Watson, F. W.	Union City
White, E. H.	Rives

OVERTON COUNTY

Breeding, W. M.	Crawford
McDonald, J. T.	Monroe, R. F. D.
McReynolds, R.	Crawford
Qualls, A. B., Secretary	Livingston

PUTNAM COUNTY

Dyer, L. x, Secretary	Cookeville
Howard, W. A.	Cookeville
MacWheeler, J.	Baxter
Moore, J. T.	Algood
Officer, W. C.	Monterey
Shipley, Z. L.	Cookeville
Trapp, J. D.	Sparta, R. F. D. No. 8

ROANE COUNTY

Carr, Henry M.	Harriman
Clack, J. M.	Rockwood
Clack, W. S.	Rockwood
Cross, J. B.	Rockwood
Fly, J. C., President	Kingston
Hill, W. W.	Harriman
Neergaard, F. A.	Harriman
Phillips, T. H.	Rockwood
Roberts, John, Secretary	Kingston
Sewell, J. A.	Rockwood
Smith, T. L.	Rockwood
Waller, J. J.	Oliver Springs
Wilson, G. E.	Rockwood
Wilson, J. C.	Rockwood
Zirkle, G. P.	Kingston

RUTHERFORD COUNTY

Adams, J. F.	Woodbury
Allen, E. B.	Murfreesboro
Allen, J. S.	Murfreesboro
Campbell, V. S.	Murfreesboro
Gordon, A. N.	Fosterville
Gott, J. R.	Murfreesboro
Jamison, A. J.	Murfreesboro
Kelton, J. C.	Lascassas
McCrary, M. C.	Woodbury
McKnight, B. R.	Auburntown
Murfree, M. B.	Murfreesboro
Ousley, B. L.	Christiana
Overall, J. C.	Murfreesboro
Robison, W. T.	Murfreesboro
Scott, J. A., Secretary	Murfreesboro
Smith, S. B.	Overall
White, B. M.	Murfreesboro
Wiles, S. L.	Murfreesboro

ROBERTSON COUNTY

Connell, J. R.	Adams
Dye, W. B.	Springfield
Fentress, S. J.	White Haven
Freeman, J. S.	Springfield
Fyke, W. F., Secretary	Springfield

Johnson, T. L.	Greenbrier
Jones, G. R.	Orlinda
Kempf, A. R.	Springfield
Matthews, R. L.	Springfield
Moore, R. D.	Springfield
Porter, W. W.	Springfield
Rude, W. S., President	Ridgetop
Thomas, J. W.	Cross Plains
Winter, W. W.	Greenbrier

SCOTT COUNTY

Boyatt, F. M., Secretary	Oneida
Foster, J. I.	Huntsville
Phillips, Pitney	Glen Mary
Phillips, T. L.	Oneida
Thompson, M. E.	Oneida

SHELBY COUNTY

Abernathy, Shields	Exchange Bldg., Memphis
Alford, W. G.	Mallory Ave., Memphis
Allen, C. D.	Dermon Bldg., Memphis
Anderson, E. L.	Bank of Com. Bldg., Memphis
Anderson, S. B.	U. & P. Bank Bldg., Memphis
Anderson, W. S.	Bank of Com. Bldg., Memphis
Andrews, J. L.	Columbian Tower Bldg., Memphis
Ankerson, G. E.	Exchange Bldg., Memphis
Anthony, D. H.	Exchange Bldg., Memphis
Arthur, W. R.	Germantown, Tenn.
Ayers, J. C.	Columbian Tower Bldg., Memphis
Bailey, C. O.	Mallory Ave., Memphis
Barbee, Harbert	Goodwyn Institute, Memphis
Barton, J. L.	78 N. Main St., Memphis
Baskins, L. S.	Columbian Tower, Memphis
Beauchamp, J. L.	Columbian Tower, Memphis
Beck, O. H.	General Hospital, Memphis
Bell, C. A.	Central Bank Bldg., Memphis
Bender, C. A.	Columbian Tower Bldg., Memphis
Bethea, W. R.	Baptist Hospital, Memphis
Berry, H. L.	Columbian Tower Bldg., Memphis
Biggs, J. M.	Heth, Ark.
Black, W. T.	Exchange Bldg., Memphis
Blackburn, E. C.	Randolph Bldg., Memphis
Blassingame, C. D.	20 S. Dunlap St., Memphis
Blecker, A. L.	U. & P. Bank Bldg., Memphis
Blue, J. B.	Columbian Tower Bldg., Memphis
Blue, W. R.	1024 Madison, Memphis
Boccellato, S. L.	Muggee Bldg., Tampa, Fla.
Bolton, L. T.	Exchange Bldg., Memphis
Bond, W. M.	Board of Health, Memphis
Bowlin, R. L.	Exchange Bldg., Memphis
Royd, L. F.	Exchange Bldg., Memphis
Brandon, W. H.	1008 Jackson Ave., Memphis
Braun, W. T.	Exchange Bldg., Memphis
Brinson, S. N.	Exchange Bldg., Memphis
Bronstein, J. H.	Exchange Bldg., Memphis
Buck, K. M.	1024 Madison, Memphis
Bunting, R. C.	Central Bank Bldg., Memphis
Burchart, Selmer	Exchange Bldg., Memphis
Burns, W. B.	Porter Bldg., Memphis
Bush, A. P.	Columbia, Tenn.
Butler, A. H.	Exchange Bldg., Memphis
Campbell, E. C.	Central Bank Bldg., Memphis
Campbell, W. C.	869 Madison Ave., Memphis
Carr, H. R.	Columbian Tower Bldg., Memphis
Carter, J. H.	U. & P. Bank Bldg., Memphis
Carter, J. P.	U. & P. Bank Bldg., Memphis
Chaffee, C. A.	Cordova, Tenn.
Chaffee, W. C.	Brunswick, Tenn.
Chaney, W. C.	20 S. Dunlap St., Memphis
Chapman, L. H.	Exchange Bldg., Memphis
Chilton, C. M.	Exchange Bldg., Memphis
Clark, J. C.	Exchange Bldg., Memphis
Clark, J. E.	Forrest Hill, Tenn.
Clary, W. F.	Goodwyn Institute, Memphis
Clifton, Joe	Bank of Commerce, Memphis

Colbert, W. C.	915 Madison,	Memphis	Hughes, J. A.	Exchange Bldg.,	Memphis
Coley, S. W.	20 S. Dunlap St.,	Memphis	Hundling, H. W.	20 S. Dunlap,	Memphis
Collier, Casa	Exchange Bldg.,	Memphis	Jacobs, A. G.	Bank of Com. Bldg.,	Memphis
Collins, J. H.	Central Bank Bldg.,	Memphis	Jacobson, H. B.	Bank of Com. Bldg.,	Memphis
Cooper, A. F., Secretary	Bank of Com.,	Memphis	Jacobson, H. J.	1024 Madison,	Memphis
Coors, G. A.	293 Hernando,	Memphis	James, D. H.	Exchange Bldg.,	Memphis
Conley, H. P.	St. Joseph Hospital,	Memphis	James, J. A.	Exchange Bldg.,	Memphis
Coppedge, T. N.	Exchange Bldg.,	Memphis	Jelks, J. L.	Fidelity Bank Bldg.,	Memphis
Cox, W. R.	U. & P. Bank Bldg.,	Memphis	Johnson, E. J.	Exchange Bldg.,	Memphis
Crawford, H. F.	Exchange Bldg.,	Memphis	Johnson, J. E.	Shrine Bldg.,	Memphis
Crisler, J. A., President	Ex. Bldg.,	Memphis	Johnson, S. E.	Columbian Tower Bldg.,	Memphis
Crisler, J. A., Jr.	Exchange Bldg.,	Memphis	Jones, G. P.	1143 Rayburn,	Memphis
Cullings, J. J.	Columbian Tower Bldg.,	Memphis	Kane, E. C.	933 Peabody,	Memphis
Daltroff, J. W.			Kaplan, Max	Exchange Bldg.,	Memphis
	12 E. Washington St.,	Hagerstown, Md.	Karsch, J. H.	Fidelity Bank Bldg.,	Memphis
Davenport, R. R.	Fidelity Bank Bldg.,	Memphis	Kincaid, D. P.	Exchange Bldg.,	Memphis
Davis, J. M.	Exchange Bldg.,	Memphis	King, V. D.	Fidelity Bank Bldg.,	Memphis
DeLoach, A. B.	Columbian Tower Bldg.,	Memphis	Kirkland, T. A.	2595 Broad,	Memphis
DeMarco, V. J.	Goodwyn Institute,	Memphis	Krauss, Wm.		
Dickson, Harry	U. & P. Bank Bldg.,	Memphis		Path. Dept. University of Tenn.,	Memphis
Dies, J. L.	1461 Vinton Ave.,	Memphis	Laten, O. M.	Exchange Bldg.,	Memphis
Dinsmore, W. T.	Florida and Iowa,	Memphis	Lawrence, W. S.	Bank of Com. Bldg.,	Memphis
Drake, J. R.	Police Station,	Memphis	Leake, E. K.	Collierville, Tenn.	
Duncan, I. G.	Bank of Com. Bldg.,	Memphis	Leake, N. E.	Baptist Hospital,	Memphis
Durley, H. W.	Whitehaven, Tenn.		Leatherwood, T. F.	Exchange Bldg.,	Memphis
Durrett, J. J.	Courthouse,	Memphis	LeRoy, Louis	293 Hernando,	Memphis
Edwards, C. W.	Goodwyn Institute,	Memphis	Levy, G. J.	376 S. Bleevue,	Memphis
Edwards, S. L.	Randolph Bldg.,	Memphis	Levy, Louis	Bank of Commerce,	Memphis
Elcan, P. D.	293 S. Third St.,	Memphis	Lewis, A. C.	Exchange Bldg.,	Memphis
Ellett, E. C.	Exchange Bldg.,	Memphis	Lewis, C. K.	Bank of Commerce,	Memphis
Evans, S. S.	Exchange Bldg.,	Memphis	Lewis, P. M.	Exchange Bldg.,	Memphis
Everett, H. B.	2541 Broad,	Memphis	Linder, F. E.	1348 Madison,	Memphis
Fagin, Robert	Exchange Bldg.,	Memphis	Lipscomb, E. J.	Exchange Bldg.,	Memphis
Farrington, P. M.	Exchange Bldg.,	Memphis	Lipsev, J. H.	1018 Madison,	Memphis
Feldman, E.	981 Florida,	Memphis	Livermore, G. R.	Exchange Bldg.,	Memphis
Fiedler, F. W.	1093 Madison,	Memphis	Lovejoy, W. H.	Goodwyn Institute,	Memphis
Fisher, J. B.	Randolph Bldg.,	Memphis	Malone, Battle	Goodwyn Institute,	Memphis
Flack, R. E.	Exchange Bldg.,	Memphis	Malone, F. M.	Capleville, Tenn.	
Flaniken, R. B.	Exchange Bldg.,	Memphis	Mann, H. A.	Central Bank Bldg.,	Memphis
Fleming, J. S.	Exchange Bldg.,	Memphis	Mann, Robert	Central Bank Bldg.,	Memphis
Fontaine, B. W.	Central Bank Bldg.,	Memphis	Marshall, C. H.	Exchange Bldg.,	Memphis
Francis, E. E.	Exchange Bldg.,	Memphis	Mason, C. R.	36 Mallory,	Memphis
Francis, J. H.	U. & P. Bank Bldg.,	Memphis	Mason, J. W.	606 Chelsea,	Memphis
Fraser, J. F.	Exchange Bldg.,	Memphis	Mason, R. E.	Bank of Commerce,	Memphis
French, J. E.	1556 Galloway,	Memphis	Maury, J. M.	915 Madison,	Memphis
Gartley, George	Goodwyn Institute,	Memphis	McCaughan, J. J.	Goodwyn Institute,	Memphis
Gerino, G. B.	326 W. Bldg.,	Houston, Texas	McCormick, R. B.	1074 Madison,	Memphis
Glover, C. H.	Exchange Bldg.,	Memphis	McCown, O. S.	Bank of Commerce,	Memphis
Goltman, Max	995 Madison Ave.,	Memphis	McDavid, R. S.	141 Mill St.,	Memphis
Goltman, A. M.	915 Madison Ave.,	Memphis	McElroy, J. B.	915 Madison,	Memphis
Gordon, J. O.	Columbian Tower Bldg.,	Memphis	McGehee, J. L.	915 Madison,	Memphis
Gragg, W. H.	Binghamton, Tenn.		McIntosh, J. A.		
Graves, T. C.	Columbian Tower Bldg.,	Memphis		Path. Inst., University of Tenn.,	Memphis
Graves, W. R.	1024 Madison,	Memphis	McKinney, Richmond	1052 Madison,	Memphis
Hall, E. R.	Exchange Bldg.,	Memphis	McMahan, A. R.	Exchange Bldg.,	Memphis
Ham, E. C.	Central Bank Bldg.,	Memphis	McNulty, J. B.	Exchange Bldg.,	Memphis
Hamilton, J. F.	1070 Monroe Ave.,	Memphis	McQuiston, J. A.	Bartlett, Tenn.	
Harris, J. H.	Exchange Bldg.,	Memphis	Meeker, Sidney	1042 Madison,	Memphis
Harris, Robin	Columbian Tower Bldg.,	Memphis	Meyer, A. H.	Goodwyn Institute,	Memphis
Haskell, L. W.	Bank of Com. Bldg.,	Memphis	Meyer, L. L.	Bank of Com.,	Memphis
Henderson, R. D.	Bank of Com. Bldg.,	Memphis	Miller, R. H.	University of Tenn.,	Memphis
Henderson, R. G.	Exchange Bldg.,	Memphis	Millis, R. H.	1374 Madison,	Memphis
Hendrix, M. B.	Exchange Bldg.,	Memphis	Mims, W. D.	1024 Madison,	Memphis
Hennessey, R. A.	Exchange Bldg.,	Memphis	Minor, J. L.	Bank of Commerce,	Memphis
Henning, D. M.	Goodwyn Institute,	Memphis	Mitchell, E. C.	1074 Madison,	Memphis
Henry, J. P.	20 S. Dunlap,	Memphis	Mitchell, E. D.	Bank of Commerce,	Nashville
Herring, J. H.	1098 Madison,	Memphis	Mitchell, F. T.	376 S. Bellvue,	Memphis
Hill, H. G.	847 Madison,	Memphis	Mitchell, J. I.	869 Madison,	Memphis
Hill, J. F.	Exchange Bldg.,	Memphis	Mitchell, W. W.	1456 Peabody,	Memphis
Hobson, J. J.	1024 Madison,	Memphis	Mobley, J. C.	66 South Third,	Memphis
Holder, E. M.	Bank of Com. Bldg.,	Memphis	Moore, Alfred	Columbian Tower Bldg.,	Memphis
Holehan, M. W.	Central Bank Bldg.,	Memphis	Moore, Moore	Bank of Commerce,	Memphis
Hoover, F. B.	Exchange Bldg.,	Memphis	Moore, T. D.	20 S. Dunlap,	Memphis
Howard, W. L.	Exchange Bldg.,	Memphis	Moore, W. P.	Columbian Tower Bldg.,	Memphis
Huddleston, J. J.	Fidelity Bank Bldg.,	Memphis	Montgomery, T. R.	Fidelity Bank Bldg.,	Memphis
Hudson, A. G.	Highland Ave.,	Memphis	Morgan, C. H.	Central Bank Bldg.,	Memphis

Morgan, J. L.-----U. & P. Bank Bldg., Memphis
 Morrison, H. C.-----1124 Madison, Memphis
 Moss, J. T.-----Shrine Bldg., Memphis
 Musgraves, C. W.-----Dermon Bldg., Memphis
 Nowlin, R. T.-----Columbian Tower Bldg., Memphis
 Owen, J. P.-----Gage Ave., Memphis
 Paine, Robert.-----Methodist Hospital, Memphis
 Patton, M. L.-----84 N. Evergreen, Memphis
 Parrotte, S. E.-----Cordova, Tenn.
 Paullus, G. E.-----Bank of Com. Bldg., Memphis
 Pearce, L. P.-----Collierville, Tenn.
 Pearce, R. S.-----Columbian Tower Bldg., Memphis
 Peete, E.-----1294 Madison, Memphis
 Perkins, P. A.-----Bank of Commerce, Memphis
 Pickett, M. R.-----20 S. Dunlap, Memphis
 Pistole, W. H.-----Exchange Bldg., Memphis
 Polk, L. R.-----993 S. Cooper, Memphis
 Porter, A. R.-----Exchange Bldg., Memphis
 Posey, W. F.-----319 S. Dunlap, Memphis
 Price, J. A.-----Oakville Sanitarium, Memphis
 Pride, W. T.-----1042 Madison, Memphis
 Priddy, H. W.-----Normal, Tenn.
 Pruett, W. V.-----Exchange Bldg., Memphis
 Pulliam, H. N.-----Exchange Bldg., Memphis
 Qualls, H. W.-----Exchange Bldg., Memphis
 Guinn, A. G.-----Central Bank Bldg., Memphis
 Ragsdale, J. W.-----Dermon Bldg., Memphis
 Ragsdale, W. E.-----Exchange Bldg., Memphis
 Raines, E. A.-----27 Hernando, Memphis
 Raines, H. R.-----Exchange Bldg., Memphis
 Rawls, G. P.-----Lucy, Tenn.
 Reinberger, J. R.-----Exchange Bldg., Memphis
 Richards, A. B.-----U. & P. Bank Bldg., Memphis
 Robinson, J. E.-----Exchange Bldg., Memphis
 Rosamond, J. H.-----1074 Madison, Memphis
 Rowland, Whitman.-----1291 Union, Memphis
 Rucks, W. L.-----1074 Madison, Memphis
 Rucker, R. T.-----Fidelity Bank Bldg., Memphis
 Rudisell, W. W.-----1014 Patton, Memphis
 Rudner, H. G.-----1098 Madison, Memphis
 Sanders, L. C.-----20 S. Dunlap, Memphis
 Sanders, R. L.-----20 S. Dunlap, Memphis
 Sanford, C. N.-----1024 Madison, Memphis
 Schmeisser, H. C.-----
 -----Pathological Inst., U. of Tenn., Memphis
 Schmittou, L. V.-----Exchange Bldg., Memphis
 Schrier, P. C.-----Shrine Bldg., Memphis
 Schultz, M. A.-----175 W. Iowa, Memphis
 Searright, M. W.-----1093 Madison, Memphis
 Seligstein, M. B.-----
 -----Union & Planters Bank Bldg., Memphis
 Semmes, R. E.-----
 -----Union & Planters Bank Bldg., Memphis
 Shea, J. J.-----Madison Ave., Memphis
 Sibley, S. J.-----Columbian Tower Bldg., Memphis
 Simpson, W. L.-----Columbian Tower Bldg., Memphis
 Smith, J. H.-----Exchange Bldg., Memphis
 Smith, O. E.-----2146 Young Ave., Memphis
 Smythe, F. W.-----Exchange Bldg., Memphis
 Sparr, H. A.-----Shrine Bldg., Memphis
 Speed, J. S.-----869 Madison, Memphis
 Spingarn, M. G.-----Columbian Tower Bldg., Memphis
 Stanford, J. B.-----Shrine Bldg., Memphis
 Stan, N. S.-----Central Bank Bldg., Memphis
 Stinson, W. D.-----Bk. of Commerce Bldg., Memphis
 Stone, J. B.-----2199 Broad St., Memphis
 Strain, S. F.-----20 S. Dunlap St., Memphis
 Swink, W. T.-----1042 Madison, Memphis
 Symons, C. A.-----Mallory Ave., Memphis
 Taylor, Newman.-----Bk. of Com. Bldg., Memphis
 Terrell, S. S.-----Bk. of Com. Bldg., Memphis
 Thomas, H. E.-----222 N. Main St., Memphis
 Thompson, E. G.-----Goodwyn Institute, Memphis
 Thorn, S. W.-----1213 College St., Memphis
 Tinkler, B. R.-----
 -----Union & Planters Bank Bldg., Memphis

Toombs, P. W.-----1024 Madison, Memphis
 Townsend, H. R.-----Oakville Sanitarium, Memphis
 Turley, H. K.-----Exchange Bldg., Memphis
 Turner, B. F.-----Bk. of Com. Bldg., Memphis
 Turner, C. C.-----Exchange Bldg., Memphis
 Vallery, J. A.-----Union Station, Memphis
 Vaughan, J. A.-----Exchange Bldg., Memphis
 Wadley, S. L.-----1026 Forrest Ave., Memphis
 Wadlington, W. J.-----Bk. of Com. Bldg., Memphis
 Walker, O. P.-----Exchange Bldg., Memphis
 Walker, W. W.-----1042 Madison, Memphis
 Wallace, W. R.-----Cherry Station, Memphis
 Walton, J. M.-----141 Mill St., Memphis
 Warr, O. S.-----20 S. Dunlap St., Memphis
 Warde, C. E.-----Exchange Bldg., Memphis
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SURGERY OF THE PROSTATE*

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PROSTATIC surgery has had a most tempestuous career in reaching its present state of efficiency. Most men past fifty years of age have enlargement of the prostate, but in many cases there are no symptoms, and in not more than fifty per cent of those in which symptoms are present are there true indications for surgical procedures.

The mortality in the early years of prostatic surgery was around fifty per cent; so high that the surgeon was slow to advise anything so long as his patient could get temporary relief by catheter, consequently the cases that came to operation were very uremic and many moribund when operated upon. Since the average life under catheterization is only about five years, and since mortality following surgical treatment has been markedly reduced, use of the catheter method of treating prostatic obstruction should be discouraged. The safeguards surrounding the surgical management of the obstructing prostate today insure small risk, excellent functional results, and eliminate the causes of death attending a catheter life. The functional results are dependent on the duration of obstruction and the condition of the upper urinary tract. It is not unreasonable to expect that,

if the obstruction is removed before the kidneys are much damaged, the results of prostatectomy will be better than those attending the operation after a long period of retention and pyelonephritis, when irreparable damage to the upper urinary tract has occurred.

It took the profession a long, long time to learn that the most important phase of the question of prostatic surgery is the proper selection of cases for operation. Then, too, after a case has been definitely decided surgical it is very important to properly prepare and select the right time to operate.

We must ever remember that we are dealing in the main with old feeble men who have from slight to well advanced cases of cardio-renal-vascular changes that place them in the sub-standard class for surgery. I know of no place in surgery where it is easier to make the mistake of doing the right thing at absolutely the wrong time unless great care is taken by all who are interested in the individual whose destiny depends on giving to him the best that scientific medicine and surgery are capable of rendering. The above sentence brings up the question who should see and pass judgment on the old man suffering from prostatism. In some clinics it is the desire for all cases to be cystoscoped, if it is possible

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to do so, to see just what the intravesical conditions are. This, of course, should be done by a competent man. About ten per cent are associated with stones and from three to five per cent have diverticula, and of course it is very important to know whether the case under consideration has any other trouble other than the prostatic trouble, and it is of equal importance to know the size and position of the prostate.

Recently the cystogram has come into recognition as a valuable aid in determining the condition within the bladder, and I think will replace to a great degree the cystoscopic examination in this field of work, for we all know that it is a considerable ordeal for an old man to undergo a cystoscopic examination, and in some it cannot be done at all, and you can always make a cystogram unless it is a case of acute retention where false passage has been made and you are unable to get in the bladder. This work must be done by a competent technician with correct interpretation of the cystogram. If the cystogram or cystoscopy reveal either stone or diverticulum this should be dealt with before the prostatectomy is done for the local infection would be too great to go ahead and remove the prostate under such local condition and of course this would call for a two-stage operation.

To reduce the mortality of prostatectomy in the hands of the average surgeon it is necessary first to have an intimate association of the internist, physiologist, and laboratory technician with the surgeon in the study of cases. Second, thorough examination of the patient by one skilled in physical diagnosis, particular stress being laid upon the lungs, heart, arteries, kidneys and nervous system. Third, complete investigation of the blood and urine by a competent laboratory analyst. Fourth, willingness and ability on the part of the surgeon to adapt his methods to the special requirements of each case, irrespective of his preferences as regards technique.

Now, the question arises as to what type of operation should be chosen and I think

we will have no difficulty in arriving at that after having the data given by the cystogram or cystoscopy, as I am persuaded to believe that with the exception of a few of our leaders, that in round numbers ninety per cent should be removed superpubically and the remaining removed perineally.

DaCosta says, "No one routine plan is suitable in all cases. The patient should be studied, and the operation chosen which is safest and best for that individual patient. The surgeon who uses one method only must wrong many patients and he retains consistency at the expense of humanity."

Caulk has been doing a great deal of work with the Young punch plus a cautery attachment which in his hands has been giving most excellent results, but it seems to me that you are working too much in the dark unless it be in an old, old man that has to have something done, and whose physical condition would not be equal to anything more radical, and this operation should be done by a man who uses this type of technique. This operation is only suitable in selected cases such as median bar formation and collar neck obstruction.

Benign hypertrophy consists, pathologically, of two distinct types, adenomatous hypertrophy, and the inflammatory type of gland or so-called prostatitis.

Prostatitis is apparently only a part of an inflammatory process involving the entire prostate and associated sexual structures, while true adenomatous hypertrophy is a distinct pathologic change occurring within the gland, producing symptoms by mechanical obstruction in most instances. If in the latter there is associated inflammatory reaction in the bladder or elsewhere in the genito-urinary tract, it is usually secondary and generally disappears completely after prostatectomy. Usually adenomatous hypertrophy produces marked frequency and difficulty of urination, accompanied by residual urine, carrying in amount from a few ounces to the entire capacity of the bladder. Very marked frequency and irritability of the bladder are associated with the inflammatory type of gland, and

although mechanical obstruction and residual urine may result, it is not the rule. In the absence of residual urine little benefit is obtained from prostatectomy in cases of this type.

Carcinoma of the prostate, which comprises fifteen per cent of the prostatic lesions, are almost always of the adenocarcinoma type and are really nonsurgical.

Benign hypertrophy is the lesion of surgical importance. The indications for prostatectomy in the benign type are based on the secondary or associated pathological conditions.

The symptoms of prostatic lesions are frequency, difficulty, pain, hematuria, and incomplete emptying of the bladder. The first three symptoms do not necessarily indicate surgery. Inability to empty the bladder completely, and persisting residual urine, are direct indications for prostatectomy, if the possibility of cord bladder has been excluded. However, the absence of residual urine is not a contraindication to operation if the gland is large and other subjective symptoms are present. Many patients have had chronic retention for a long time, with marked renal insufficiency and are in a state of chronic uremia. Surgical removal of the obstruction without preliminary preparation has precipitated acute uremia, with a very high mortality rate. Recognizing that all patients with prostatic obstruction and residual urine are really uremic and treating them for this condition before operation have been important factors in reducing the mortality rate to less than five per cent in the hands of skilled surgeons. By draining the bladder with a urethral catheter or with a suprapubic tube for a period, varying with the amount of renal insufficiency and the general condition of the patient, prostatectomy will be attended with but little risk.

The renal functional tests and the general condition of the patient determine the time when operation may be performed safely. Under unusual circumstances, only, may prostatectomy be performed with safety when there has been a return of less than thirty per cent of the dye in two hours

by the phenolsulphonephthalein test, or if more than fifty mg. of urea for each one hundred cc. of blood is retained.

Prostatectomy was developed in the early years of surgery of the bladder through perineal or suprapubic drainage for urinary retention and the removal of vesical calculi. In the natural evolution the perineal and superapubic operations were developed. The perineal is anatomically the method of choice and has been advocated for years by various surgeons; however, because of the disadvantages of the high incidence of post-operative incontinence and recto-urethral fistulas, and because, in cases of benign hypertrophy the suprapubic method permits direct attack on the part of the gland involved; that is, the lateral and median lobes, the latter method has become quite universal. The suprapubic method, furthermore, possesses an advantage in its accessibility to the associated lesions of the bladder.

The choice between the one or two stage suprapubic operation until a year or so ago was largely personal; however, the consensus of opinion favors the one-stage operation unless there is some contraindication such as accompanying stone, diverticulum or marked uremic condition.

It is well known that a recent cystostomy forbids the wide exposure of a one-stage operation and necessitates blind enucleation of the gland, which at times results in failure to remove all of the obstructing gland, or to control the bleeding accurately. The one-stage operation is, therefore, preferable to the two-stage operation when it can be done safely. Recognizing that the preliminary suprapubic drainage causes improvement in the renal and general condition of the patient, the disadvantages of the two-stage operation are overcome by instituting preliminary drainage of the bladder by means of a permanent urethral catheter instead of suprapubic cystostomy, which converts the procedure into a one-stage operation. The method of gradual decompression of the bladder in the presence of acute or chronic retention and uremia, as described by von

Zwalenburg, and Bumpus, has largely obviated the necessity of suprapubic drainage, and has prevented precipitate acute uremia and death.

As you know, it has been in the very uremic old men a most arduous task on doctors, nurses, patient and friends, as well as a considerable economic factor in converting a very poor prostatic risk into a good surgical one. I am told that Doctor Young has kept many of his cases, the uremic pyelonephritic type, in the hospital for months before he could get them properly prepared and, of course, that accounts for his approximate of one per cent mortality. Many of these old men are living up their funds that they stored up for old age and many have lived up their savings and are on their family and friends, so it is obviously important that this preoperative period be shortened as much as possible. This can be done by giving daily or every other day a 1000 c. c. of saline intravenously followed by a hot pack or electric cabinet sweat. I had one patient that I had had in the hospital for a number of weeks and his blood urea was 110 mg. to each 100 c. c. of blood, and we were unable to get it below 100 until we began this daily treatment. Some of these old men are so toxic that you can't get them to take sufficient fluids by mouth preoperatively or postoperatively. I really think that I have saved two old men, one age 73, and the other 79, after the removal of the gland by intravenous saline. The first we gave eighteen quarts plus many hypodermoclysis, and the other twenty-two and one-quarts plus many hypodermoclysis, and also gave all by proctoclysis that the bowel would absorb.

Until recent years the operation has been carried on in the dark by means of the sense of touch. The one-stage operation facilitates exposure and visualization of the entire procedure, insuring complete removal of the obstructing gland and irregular tags at the neck of the bladder, and permitting accurate control of all bleeding.

In surgery of the prostate, the application of the principles of hemostasis as ap-

plied elsewhere in the body, is equally effective. Hunt says the mortality rate in prostatic surgery is in direct proportion to the loss of blood.

Local anesthetics have supplanted general anesthetics in prostatic surgery, with marked influence on the immediate and end results and post-operative pulmonary complications. In the past, with the use of ether, it was essential that the operation be performed with dispatch in order to minimize depression of the kidneys by the drug. However, this sacrificed accuracy for speed. Spinal anesthesia has been successfully used in a large series of cases, but it possesses the disadvantage of a marked drop in blood pressure and frequent disquieting symptoms which are entirely obviated by caudal and transsacral and abdominal infiltration, as described by Labat and Meeker. As complete anesthesia and relaxation are obtained as with spinal anesthesia, without the disquieting symptoms of the latter. Post-operative pulmonary complications following prostatectomy under local anesthesia rarely occur, and are practically always by embolism rather than caused by inhalation.

The ultimate results of prostatectomy bear a direct relation to the length of time that retention and infection of the urinary tract have been present, and it is reasonable that the best functional results are obtained in cases in which prostatectomy is performed before pyelonephritis develops.

The causation of the mortality rate in the past would be: First, hemorrhage, as formerly little attention was paid to control for bleeding, for when the enucleation was done in the dark we had to trust to packing as means of control. Second, uremia, due to inefficient preoperative preparation. Third, general sepsis, and fourth, pneumonia.

So we wish to emphasize a more careful preoperative preparation and the actual visualized conduct of the operation to decrease the mortality rate to the minimum.

I wish to thank the American College of Surgeons for the literature in helping me to prepare this paper.

PRESENT STATUS OF HIGH VOLTAGE X-RAY THERAPY*

W. S. LAWRENCE, M.D., F.A.C.R., Memphis

THE advent of high voltage x-ray therapy was accompanied by such "great expectations" that in the very nature of the case some disappointments were inevitable.

Some five years ago reports emanating from certain German clinics seemed most encouraging. Stimulated by the ever-present hope or almost fixed belief that some day cancer control will be a reality, these reports were greeted with open arms, were magnified and distorted, until many were ready to believe that the long-looked-for era had actually been ushered in.

The reasons for the readiness of this belief are to be found in the knowledge of the previous accomplishments of radio-therapy in superficial conditions. Not only could radio-therapy be regarded as practically a specific for superficial malignancy, but also for a number of other superficial diseases, such as blastomycotic dermatitis, ringworm of the scalp and nails, epidermo-phytosis, carbuncle, etc., that had always baffled the skill of both the internists and surgeon.

The reasoning, then, either conscious or subconscious, seems to have been this: If the x-ray may be regarded as practically a specific in many otherwise intractable surface diseases where any required dose may be easily delivered, why should it not be equally efficacious in deep-seated disease if only the same dose could be safely delivered at the site of the disease? Before the days of high voltage x-ray therapy it seemed a case of "one thing thou lacketh," namely, not the proper remedy, but the ability to deliver the remedy where needed in adequate doses. Now the contribution of high voltage x-rays is just this "one thing;" this thing that was lacking,

namely, the ability to deliver any required dose to any part of the body. The amount of x-rays generally required to cure skin cancer is one pronounced and prolonged erythema dose. That is, the amount of ray that will cause the normal skin surrounding the growth to become very, very red and remain so for two weeks or longer. This dose can be very accurately measured and recorded. And now the conclusion: Since cancer cells are cancer cells, and since a given dose of radiation administered to a mass of cancer cells on the surface of the body will cause complete eradication of said cells, will we not unquestionably get the same results if we administer the same dose to a mass of cells deeply situated within the body? Certainly the conclusion seems logical. It is hardly a matter of wonder, then, that the coming of high voltage and its unquestioned ability to deliver the required dose, should be accompanied by a wave of great expectations, which carried many off of the solid ground of known results far into the sea of hyper-enthusiasm.

But in reaching this apparently logical conclusion two very important factors were not taken into account. These factors are, first, that two malignant growths may be apparently identical *macroscopically*, and also *microscopically*, and yet behave very differently when subjected to the influence of radiation. Ewing has suggested that all malignant tumors might be divided into two classes, those that are radio-sensitive, and those that are not. This intangible and invisible difference has likely to do with the intra atomic chemistry, or the stability of the atoms combining to form the malignant cells. Primarily it is not the mass nor the single cell that is attacked by the x-ray, but the atom. Radiation causes atomic disassociation and this in

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turn sets up chemical changes and resulting histological changes. The other important factor overlooked is this: Two tumors may be equally radio-sensitive and situated at an equal depth within the body, and yet their relation to normal radio-sensitive vital organs may be so different as to render one easily curable by radiation and the other absolutely hopeless. Witness the brilliant results of radio-therapy in carcinoma of the cervix, and the dismal failures in carcinoma of the stomach.

This brings up the point that not only does malignant tissues vary in radio-sensitiveness, but normal tissue also. The variation in sensitiveness of the tissue of different organs is very great—some being able to withstand without damage, roughly, from four to five times as much as others.

In treating cancer of the cervix, however extensive, it is not necessary that the beam of x-rays pass through any markedly sensitive normal tissue. The ovaries, it is true, lie in this region, but at the cancer age the effect on the ovaries may be disregarded. For this reason, then, large doses of radiation may be delivered to cancer cells within the pelvis with practically no danger of permanently injuring normal structures. The pelvic structures are so situated that they may be rayed from five different angles. If there should be any lack of dosage, it may be supplemented by radium within the cervix. The required dose then can easily and safely be delivered, and in all of those cases where the tumor is radio-sensitive either a cure or the greatest possible palliation will result.

How different is the case of treating carcinoma of the stomach. The stomach is in close relation to many vital structures, some of which are quite radio-sensitive. The gastric mucosa and its secreting glands are very radio-sensitive. Full doses often cause such extreme nausea and loss of appetite that the patient's nutrition cannot be kept up to normal. The pancreas does not stand large doses of radiation well. The suprarenal capsules are quite radio-sensitive, vital structures which come

within the field of radiation in treating cancer of the stomach. It is not difficult to understand why success has been so limited in high voltage x-ray treatment of cancer of the stomach.

Another factor not taken into account in reaching the conclusion that internal cancer would respond as well to radiation as external, if only the same dosage could be safely administered is this: Many internal cancers are connected with the gastro-intestinal tract, and the gastro-intestinal tract is subjected to continual irritation by the movements of its contents. It is well known that any continued irritation is one of the exciting causes of cancer. This being true, it would seem to follow that the cure of an established cancer would be extremely difficult if not impossible so long as the irritant continues to act. To discontinue the irritant is to withdraw the patient's nourishment, and there you are between Cylla and Garibdis. Cancer of the esophagus, of the stomach, of the colon, of the rectum, then, are rendered doubly difficult.

Having now called attention to some of the likely impossible things that high voltage has failed to accomplish, let us briefly review some of the things that have been made possible by this agent.

First, let me again remind you, that high voltage is not a separate entity, not a new remedy, but rather a new ability to apply an old remedy. High voltage x-rays produce no known effects on living tissue that cannot be produced by low voltage x-rays. The one and only contribution of high voltage x-ray is their resultant ability to reach safely the deeper parts of the body, delivering large quantities of radiation where it is needed. Wherever large quantities of radiant energy are indicated deep within the issue, high voltage x-ray is indicated. Specific illustrations will make this point clearer:

The female reproductive organs in both health and disease are quite radio-sensitive. Almost every case of cancer of the cervix is radio-sensitive. This was observed years ago when radiation by means

of radium was first used in the treatment of cervical cancer. Today high voltage x-ray and radium together have removed cancer of the cervix from the list of surgical diseases. Few surgeons of note now advise operation at any stage of cancer of the cervix. Radium alone within, or within and against the cervix is quite sufficient in very early cases. But radium alone is not sufficient for more advanced cases, the so-called border-line cases. Radium can never cure advanced cases of the frozen pelvis type. Radium does, it is true, improve for a time nearly all cases of cancer of the cervix (which only goes to prove that nearly all cases are radio-sensitive), but it can never cure advanced cases, while high voltage x-ray will succeed in quite a number of advanced cases, even of the frozen pelvis type. There is, of course, a physical reason for this failure of radiation from one source and success of radiation from another source—this failure of radium and success of x-ray. The reason is this: Radium is placed either within or against the cervix. The radium filter is about one mm. thick, so that the tissue in contact with the radium capsule is about one mm. distance from the radium element. The radium can be left in situ only until the tissue in contact with the capsule or needles has received a full dose. Now suppose that the disease has extended to a point one or two inches from where the radium can be placed, what dose will such malignant cells receive? Since all forms of radiant energy decrease in intensity with the square of the distance, and since one inch is equal to twenty-five mm. if a full dose were given to cells at one mm. from the radium, those cells at a distance of twenty-five mm. would receive only $1/625$ of a full dose and cells at a distance of two inches would receive only $1/2500$ of a full dose. Should the radium be left in long enough to give a full dose to cells one inch away, the more adjacent structures would receive several hundred times a full dose, and this would result in a radium burn or complete tissue death with the formation of vesico vaginal fistula. Obviously,

then, radium cannot cure extensive carcinoma of the pelvis. Radium is a most excellent close range weapon.

Now it so happens that the physics of the x-ray is such that it can be made to spread nearly uniformly over and through the whole pelvis, no cells will be overdosed, few will be under-dosed. This uniform radiation by means of high voltage x-ray is the treatment indicated, and therefore I hold and stand prepared to prove, theoretically at least, that any patient with an extensive radio-sensitive cancer that has not been given the benefit of high voltage x-ray therapy has been denied, the one thing that offers a chance of restoration to health.

Fibroid tumors, at suitable age, have always been quite radio-sensitive, but before the coming of high voltage the x-ray treatment of fibroids was attended by very considerable danger to the skin of the abdomen. High voltage enables us to get the required amount of radiation through to the tumor without endangering the overlying skin.

Almost the same may be said of the treatment of excessive hemorrhage at the menopause. High voltage has reduced the artificial establishment of the menopause to safe, simple and satisfactory procedure. Of course, this can as well be accomplished by radium, but from the standpoint of the patient the x-ray method is simpler and far preferable. Radium means likely hospitalization, possibly a general anaesthetic, and certainly twelve to twenty-five hours in bed with gauze packing. The x-ray method means two to four office visits—no exposure, no pain, no trouble. This method is so uniform in its results that to the writer's knowledge no failure has ever been recorded.

In cases of leukaemia or of Hodgkins disease, which may have to be treated from time to time for a number of years, the amount of treatment necessary to induce a remission may be given without the slightest danger to the skin. This is not true of low voltage x-ray, and formerly in treating these cases we were always in

dread of the time when the skin would rebel, and treatment which the patient sorely needed could not be given.

At a recent meeting of urologists in Dallas it seemed to be the consensus of opinion that high voltage x-ray therapy was the best form of radiation in cancer of the bladder, and that it could be relied upon to give marked palliation and in some instances a cure.

What has high voltage accomplished in cancer of the breast? Not a great deal. Why? Simply because high voltage was never indicated in treating the average breast cancer. High voltage is indicated wherever large quantities of radiant energy are needed within the tissue. High voltage is indicated in very heavy patients having breast cancer, but not in the average weight. Most breast cases should be treated with a voltage of about 145 K. V., and not 200 K. V. This is regarded as medium voltage. Higher voltage than this will give a larger dose to the lungs than to the chest wall and axilla, and this is not the object of treatment. Treated with the right degree of penetration much can be accomplished in relapsing cases, and more can be accomplished in preventing relapses by adequate post-operative treatment. Primary tumors, in my judgment, should not be treated unless surgery is positively contraindicated. This, of course, does not refer to pre-operative treatment.

SUMMARY

1. High voltage x-ray is a decided step in advance in the treatment of a number of diseases.

2. It has accomplished, not all that was hoped for it, but all that could reasonably be expected of it.

3. In the frozen pelvis type of carcinoma of the cervix its results are often almost unbelievable.

4. Any case of advanced carcinoma of the cervix which has not had high voltage x-ray in adequate dosage has not, in the judgment of the writer, had every stone turned in its behalf.

DISCUSSION

DR. J. L. JELKS, Memphis: I am not an x-ray man but I rise because Dr. Lawrence has been so fair and has presented here the best and most satisfying paper I have ever heard on the use of the x-ray in cancer. He has been absolutely honest and fair and that is more than I have felt I could say of some who have presented papers.

While in London two summers ago where I had gone to study cancer of the intestine and having received such unfavorable results from radium and x-ray, I had an opportunity to hear Mr. Ernest T. Myles, who is the chief surgeon of the London Cancer Hospital, say that x-ray never cured cancer of the intestine. Now comes Dr. Lawrence and he is absolutely fair. I have been referring these cases to the x-ray man hoping I might get some help. I wish that the medical profession would condemn the promiscuous use of the x-ray by inexpert so-called x-ray men in the treatment of cancer. We are trying to educate the treatment of cancer. We are trying to educate the public in this respect for who is it that seeks hope where hope does not exist more readily than does the victim of cancer. I want to commend Dr. Lawrence for his fairness.

Dr. SIDNEY MEEKER, Memphis: I want to report a case Dr. Lawrence has treated for me. This woman, 45 years old, had bleeding almost constantly for two years. She had been taking two or three douches a day and finally came to me for examination. I found a frozen pelvis, a uterus larger than my fist and some cauliflower growth at the cervix. She also had a cystocele and rectocele. I knew that the case was not surgical. There was very little movement that could be obtained of the uterus. Dr. Lawrence began to treat the case. After one treatment the bleeding practically stopped but returned again. He gave her several deep therapy treatments. I made an examination after the second series of treatments and found that the uterus was fairly movable, that the vaginal vault was getting quite soft and felt more like normal and the cervix had become quite a bit smaller as had the uterus. I examined this patient later on at intervals and found that the cervix had become smooth with the exception of one nodule. Instead of giving her radium I applied an electric cautery and burned that nodule. In two weeks she came back and there was just a little slough where the nodule had been. I saw her last Saturday and there is just merely a dimple in the cervical canal, with small fissure. The nodules are all gone. Insertion of the speculum causes just a few drops of blood from the stretching. The vaginal vault is quite soft and feels quite normal. The uterus has shrunk to practically the normal size for a woman, 45 years of age, as stout as this woman is. I believe that we have a complete cure.

DR. W. S. LAWRENCE, Memphis (closing the

discussion): I am glad Dr. Jelks told the truth as nearly as I tried to tell it. I thank him for his commendation. While I never succeeded in curing cancer of the rectum with x-ray, I have succeeded in getting a very marked palliation, seeing the patient gain about ten or fifteen pounds and being greatly relieved. While that is not a cure,

I think it is worth while. I have seen the same in cancers in other parts of the body. That is all we physicians can do—prolong life, but never indefinitely.

I could have reported a great many cases somewhat similar to the one Dr. Meeker reported, those that have been well for three or four years.

ANTITOXIN TREATMENT OF SCARLET FEVER*

GILBERT J. LEVY, M.D., Memphis

THE scientific efforts of Doctors Dick and Dick on scarlet fever have furnished one of the great outstanding discoveries in the field of medicine in late years. Their researches offer a fitting climax for brilliant studies began twenty-five years ago.

The presence of the hemolytic streptococci in the throats of scarlet fever sufferers was known for many years. Loeffler, in 1884 called attention to the numerous hemolytic streptococci in the throats of the acutely ill scarlet fever patients. Again, hemolytic streptococci were suspected but not detected in the scarlet rashes following puerperal fever and burns. Then again, it was found most difficult to associate the streptococcus as a producing factor in the sepsis of scarlet fever, namely, the complications such as otitis media, mastoiditis, adenitis, nephritis and septicemia.

It had not been shown that any one type of streptococcus hemolyticus was characteristic of the disease. There were no morphological, cultural or immunological characteristics by which the streptococcus of scarlet fever could be differentiated from streptococcus associated with other pathological processes. Experimental scarlet fever had never been produced. These questions were answered in detail by Doctors Dick and Dick. These two workers obtained a case of typical scarlet fever by inoculation with a pure culture of a hemo-

lytic streptococcus isolated from a lesion on the finger of a nurse who acquired the disease while caring for a convalescent scarlet fever patient.

In their next experiments they fulfilled all of Koch's postulates with the streptococcus hemolyticus. In short order they discovered that a soluble toxic substance was constantly present in scarlet fever. Now, with the finding of the specific toxin, the Dicks laid a scientific foundation for the

1. Recognition of scarlet fever streptococci;
2. The development of a skin test for susceptibility;
3. Preventive immunization;
4. The production of an antitoxin.

In this brief presentation we only make mention of the skin test and toxin for preventive immunization. We shall confine ourselves only to the discussion of the use of antitoxin in the treatment of scarlet fever.

One of the first efforts to produce a curative serum for streptococcal infection was made by Mamorek in 1895. In 1897 Weisbecker treated seven cases of scarlet fever with convalescent scarlet serum.

Moser, in 1902, prepared an antescarlatinal streptococcus serum by immunizing horses with strains of living streptococcus hemolyticus isolated from the blood stream of fatal and malignant cases of scarlet fever. Moser recommended from 100 to 200 c. c. of his serum for curative purposes.

*Read before the Tennesse State Medical Association, Memphis, May 11, 12, 13, 1926.

In Russia this particular serum met with success. Recently, Askenov reported 1,335 cases treated in this manner. He claimed he reduced the mortality twenty-five per cent.

There is no doubt that Moser's serum produced a favorable influence on the temperature, rash and general condition. This was due to the toxin contained in their broth cultures with which they immunized horses. The resulting serum contained the corresponding antitoxin. But this unconcentrated horse serum had resulted in frequent and severe serum reactions. Because of these reactions, to which some deaths had been attributed, the use of Moser's serum was gradually abandoned.

In 1905 a Russian investigator, Savchenko, attempted to show that the serum contained both scarlet fever antitoxin and streptococcic bactericidal bodies.

Russ and Jungman used serum and whole blood from convalescent patients ten to 100 c. c. doses. They first tested the serum for syphilis and sterility.

Zingher made use of whole blood from recently convalescent scarlet fever patients. He used blood from the median basilic and caught it in sodium citrate solution to prevent coagulation and immediately injected fifteen to thirty c. c. into large muscle groups.

Dochez and Sherman, in 1924, described an antistreptococcus serum for use in scarlet fever. These investigators injected agar subcutaneously in horses, and after the agar solidified, inoculated it with living streptococci. They employed this method with the idea that the organism would remain localized, but the streptococci grew through the agar mass and caused discharging abscesses in some cases. However, they did develop a potent antitoxin. Their serum gave the Schulz-Carlton test, even when the serum had been diluted several thousand times. This serum was used in cases in New Haven and in New York and the same results obtained as had formerly been obtained with the unstandardized serum by Moser and Sarchencho.

Blake has reported that twenty uncom-

plicated cases of scarlet fever were cured within thirty-six hours by Dochez's serum, a recovery percentage of 100 for the series. A series of six cases with septic complications showed recovery within sixty hours in five cases and death in one case only. Blake's observations were as follows:

(1) Intracutaneous injection of the serum in patients with scarlet fever produces a local blanching of the rash at the site of injection. (Schultz-Charlton rash extinction phenomenon.)

(2) Intramuscular injection of the serum in therapeutic doses early in the disease is followed by rapid clinical cure, as evidenced by critical fall of temperature and pulse to normal, rapid fading of the exanthem and prompt return to a state of well being.

(3) The specific toxic substance in the blood of patients with scarlet fever is neutralized in vitro by Dochez's serum.

(4) The blood serum of scarlet fever patients acquire the capacity to blanch the rash in scarlet fever within a few hours after serum treatment.

Birkhaug likewise reports similar results to those as stated above.

It is obvious that large or bulky doses of serum in amounts of 100 or 200 mils are inappropriate for any curative action. Besides the unconcentrated serum had frequently resulted in very severe serum reactions.

Dick's method of concentration was by the same method employed for the concentration of other antitoxic sera by immunizing horses with sterile scarlet fever toxin. Their therapeutic results were published in *Journal A. M. A.*, 84:803-805, March 14, 1925. Their results indicated that injected intramuscularly it blanched the rash, lowered the temperature, improved the general condition and when given early diminishes the incidence of complications and sequelae.

The U. S. Public Health Service has prescribed that "No antitoxin for scarlet fever shall be distributed unless proper tests have shown that one c. c. of the final product will neutralize and hold in neutralization for forty-eight hours a minimum of 1,000

skin test doses of the control toxin. It is obvious that serums of considerably stronger potency can be obtained in the manner indicated above.

Dosage: We are firmly convinced that the earlier antitoxin is given the earlier the neutralization of the toxin and the simultaneous establishment of excess antitoxin in the circulating blood of the patient. This point cannot be emphasized too much. Let it be understood that in the light of our present knowledge as to the cause of scarlet fever and a known antitoxin possible, that we are treating every case of scarlet fever seen early in the disease with scarlet fever antitoxin. It has been our method for several years to give adrenalin chloride 1/1000 sol. subcutaneously (in age proportionate dosage) before the administration of any foreign serum. We also warm the antitoxin to body heat and transfer the antitoxin to a glass luer syringe before injection. In this manner we can readily

measure the amount of antitoxin we desire to use. The adrenalin chloride is an advance stimulant to any anticipated shock or serum reaction such as occasionally arise. A second hypodermic of adrenalin is always close at hand for that expected but rare condition, true anaphylaxis.

In our series scarlet fever antitoxin has been given intramuscularly and intravenously. For intramuscular injection the abdominal or gluted muscles are used, for we find the patients are much more comfortable when this site is employed. Intramuscular route is used for mild and moderately severe cases. The intravenous injections are given for all severe cases and all toxic cases. The median basilic vein is used in adults and the external jugular vein in young children.

The following series of cases were treated with the scarlet serum:

Thirteen cases with the unconcentrated.
Twenty-one cases with the concentrated.

EFFECT OF (UNCONCENTRATED) SCARLATINAL ANTISTREPTOCOCCUS SERUM IN ACUTE CASES SCARLET FEVER

Case	Age	Day Dis.	Nat. Disease	Dose of Serum	Temp.—Pulse B Resp. A	Results and Complications
Annie J.	13	7	Mod. Severe. Hist. vious kidney trouble, palpable spleen	12 cc Intra-mus.	T- 99 98 P- 96 92 R- 22 24	Poor resistance, under weight; temp. remained flat. Eruption disappeared in 18 hrs. Desquamation on 3rd day after entered hospital. Complication in 10 days. Acute nephritis. BP 160 Convulsions. Urine loaded with albumen casts, etc. Recovery.
Mildred W.	8	2	Toxic Mod.	24 cc Intra-mus.	T-103 100 P-150 120 R- 40 30	Marked improvement; rash rapidly disappeared on 5th day. Marked nasopharyngitis. Cervical adenitis. Discharged 22nd day.
Bennie L.	7	3		20 cc Intra-mus.	T-103.6 98 P-136 100 R- 32 24	Rash, temp. normal in 24 hrs. No complications.
W. L. S.	29	3	Toxic Severe	15 cc Intra-ven.	T-101 99 P-112 104 R- 24 26	Rapid clinical improvement. Rash promptly disappeared. No complications.
Louis J.	12	4	Mod. Severe	12 cc Intra-ven.	T-100 101.4 P-100 112 R- 24 32	Rash disappeared promptly. Temp. normal 4th day. On 7th day acute cervical adenitis left. Discharged 12th day, cured.
LaVerne F.	7	4	Mild	30 cc Intra-mus.	T-102 99 P-132 104 R- 36 22	Prompt disappearance of rash. Angina cleared up. No complications. Well on 3rd day.
Byron P.	21	3	Mod. Severe	10 cc Intra-ven.	T-101.2 98.6 P-112 80 R- 28 24	Def. rapid clinical improvement. Rash gone in 48 hrs. Severe urticaria on 6th day. No complications.
Elsie May Graves	4	?	Mild	20 cc Intra-mus.	T-102 101 P-124 110 R- 26 26	Slow disappearance of rash. No complications.

EFFECT OF DICK'S (CONCENTRATED) SCARLATINAL ANTISTREPTOCOCCUS SERUM IN ACUTE CASES SCARLET FEVER

Sister A.	32	5	Toxic Marked	5 cc Intra- ven.	T- 99 99 P-120 118 R- 22 22	Rash gone in 12 hrs. Toxic symp- toms cleared up. Patient vaccinated against smallpox. Developed nu- merous pus lesions 10 days after vac. with high fever. Urticaria.
Agnes W.	3	7	Toxic	20 cc Intra- mus.	T-101 102 P- 118 R- 42 32	Gen. Cond. improved in 18 hrs. after serum. Temp. not influenced. Com- plications 5th day. Pus shows phag- ocytes. Cervical adenitis. Bilateral sup. otitis media. Discharged as cured on 23rd day.
Jr. Lovett	17	No His.	Mod. Severe	15 cc Intra- mus.	T-102.6 100.8 P- 100 R- 30 24	Clin. improvement noted in 12 hrs. Rash disappeared promptly. No com- plications.
Mildred F.	6	1	Mod. Severe	30 cc Intra- mus.	T-102 100 P-140 130 R- 40 26	Notable clin. improvement in 12 hrs. Rash gone. No complications.
Albert Clayton Gannon	1	?	Mod. Severe	30 cc Intra- mus.	T-102.6 102 P-	Cond. little influenced by serum. Cond. complicated on entrance by Vincents Angina involving gums, buccal mem- brane. Impetigo on body. Recovery in two weeks. Neo. Arseph given for Vincents.
Case	Age	Day Dis.	Nat. Dis- ease	Dose of Serum	Temp.—Pulse B Resp. A	Results and Complications
Monte L.	17	4	Toxic	13 cc Intra- ven.	T-102 98.6 P-120 96 R- 24 20	Toxemia improved in 12 hrs. Rash gone in 18 hrs. No further febrile symptoms. Complete recovery in 36 hrs. No complications. No des- quamation.
Fay G.	4	No His.	Mod. Severe	12 cc Intra- mus.	T-101.2 100 P-118 106 R- 26 20	Temp. normal in 48 hrs. Rash disap- peared promptly. Desquamation profuse. No complications.
Eliz. G.	5	3	Toxic, Severe Angina Rash	24 cc Intra- mus.	T-102.6 100 P-128 118 R- 26 26	Temp. normal in 72 hrs. Rash prompt- ly disappeared. No desquamation. No complication.
Wm. McN.	14	2	Mod. Severe	12 cc Intra- mus.	T- 99.6 98.8 P-100 96 R- 24 24	Rash disappeared in 72 hrs. Angina until 5th day. Desquamation on 9th day. Complete recovery.
Arthur B.	32	4	Straw- berry tongue; promi- nent Pa- pillae; cerv. adenitis; no rash	12 cc Intra- mus.	T-102.4 99 P-106 92 R- 26 22	Temp. down in 72 hrs. No rash ap- peared. Exposed to 2 other cases. Slight desquamation on 10th day.
Edna S.	24	3	Mild	12/23 12 cc 12/26 12 cc Intra-mus.	T- 99 P-90 R- 22	Rash not influenced by serum. Serum sickness followed first injection of antitoxin. Complete recovery by 11th day.
Kath- leen B.	3	11	Toxic very	12/29 12 cc 12/31 12 cc Intra-mus.	T-101 103 P-120 R- 30 40 T-104 103 P- 130 R- 36 30	Sinusitis on admission; marked an- gina. Antitoxin exerted little influ- ence this late in disease. Bilateral sup. otitis media. Discharged 1-15- 26 cured. Ears cleaned up. No dis- charge from nose.
Arthur B., Jr.	6	4	Toxic Severe	12/28 12 cc 12/31 12 cc Intra-mus.	T-100.3 100 P-120 112 R- 22 24 T-100.6 99 P-120 110 R- 26 24	Jan. 2, Desquamating strawberry tongue; cervical adenitis; Dis. 1-13- 26. No complications.

EFFECT OF DICK'S (CONCENTRATED) SCARLATINAL ANTISTREPTOCOCCUS SERUM IN ACUTE CASES SCARLET FEVER—Continued.

Herbert Kelly	7	4	Mod. Severe	12 cc Intra-mus.	T-102.6 P-144 R- 36	102 140 30	Rash disap. in 72 hrs. Severe serum sickness. Urticaria, itching, etc., on 6th day. Otitis media non-up. 12-19. Desquamation marked. Recovery complete 14 days.
Edna S.	4	2	Mild	12 cc Intra-mus.	T-102 P-140 R- 26	99 110 20	Rash disappeared. Temp. normal in 12 hrs. No complications. No desquamation.
John Mc.	5	2	Mod.	12 cc Intra-ven.	T-103 P-142 R- 28	99 112 20	Temp. normal in 18 hrs. Rash disappeared immediately. Patient well on 3rd day. Sitting up in bed. No complications. No desquamation.
Katherine H.	13	3	Mod.	12 cc Intra-mus.	T-101 P-130 R- 24	100 110 20	Temp. normal in 18 hrs. Rash faded in 12 hrs. No complications. Desquamated on 12th day.
Gordon C.	2	2	Mild	None	T-102 P-140 R- 28		This case had been previously exposed to one mentioned above. Protective dose 2½ cc scarlet serum (150,000 skin test doses) was given intra-muscularly. Developed scarlet 18 days after first exposure. No desquamation.
Case	Age	Day Dis.	Nat. Disease	Dose of Serum	Temp.—Pulse B Resp. A		Results and Complications
Mary D.	8	2	Mild	12 cc Intra-mus.	T-101 P-130 R- 26	99 120 20	Rash disappeared in 18 hrs. Temp. remained normal after first day. Severe urticaria on 6, 10 and 11th day. Desquamation 14th day.
Joseph C.	4	2	Mild	12 cc Intra-mus.	T-103 P-146 R- 30	100 120 24	Quick response to antitoxin. Rash gone in 2 hrs. Temp. reached normal in 24 hrs. No complications.
Josie D.	28	3	Septic	12 cc Intra-ven.	T-103.4 P-120 R- 30	100 120 26	Antitoxin had little influence on this septic case. Rash disappeared promptly. Temp. rose after 24 hrs. Complications, frontal sinusitis, albuminuria, delirium, rapid pulse, joint pains, supp. otitis media, right, mastoiditis. Operation for mastoid. Profuse desquamation 14th day.
Virginia H.	18	2	Severe	12 cc Intra-mus. 12 cc Intra-ven.	T-103 P-140 R- 30	99 100 20	Rash disappeared in 24 hrs. Left peritonsillar abscess on 5th day. Serum sickness urticaria on 14th day. Large wheels over body. Nausea, vomiting. Temp. 100. Swelling of wrists. Serum sickness lasted 3 days. Desquamation on 9th day. Discharged as cured.
Myrtle S.	8	9	Mod.	12 cc Intra-mus.	T-103 P-122 R- 26	103 110 26	Treated as diph. on entrance. On 4th day right sup. otitis media. Scarlet symptoms on 9th day. Immediate disappearance of rash. Temp. course unaffected. Normal 14th day. No desquamation. Mastoid.
Edward G.	6W	3	Mod. Severe	12 cc Intra-ven.	T-103.6 P-116 R- 26	98.4 100 20	Temp. dropped to normal in 18 hrs. Rash promptly disappeared. At end of 1 week developed acute sup. otitis media, left and acute cervical adenitis. Fever for 5 days. Complete recovery. Discharged on 19th day. No desquamation.
Lee H.	20W	4	Mod. Severe	12 cc Intra-ven.	T-102.6 P-126 R- 26	98.6 94 20	Complete recovery in 48 hrs. Prompt disappearance of rash in 12 hrs. Temp. dropped immediately. No desquamation.
Isabella H.	4W	?	Mild	12 cc Intra-ven.	T-101.6 P-130 R- 36	101.4 118 26	Temp. unaffected by antitoxin. Temp. remained up for 72 hrs. Rash disappeared promptly. No desquamation.

RESULTS IN 37 MODERATELY SEVERE AND SEVERE CASES

Deaths -----	0.
Post Scarlet Nephritis, per cent -----	5.5
Otitis Media, per cent -----	16.2
Mastoiditis, per cent -----	5.5
Severe Cervical Adenitis, per cent -----	13.5
Serum Sickness Urticaria, per cent -----	16.2
Sinusitis, per cent -----	5.5
Peritonsillar Abscess, per cent -----	2.7
Vincent's Angina, per cent -----	2.7

CONCLUSIONS ON THE THERAPEUTIC VALUE OF ANTITOXIN

These results show that the unconcentrated and concentrated antitoxin is of practical therapeutic value.

The antitoxin serum should be given early in the disease, before complications have occurred and before too much damage has been done to the tissues.

In moderate cases it should be given intramuscularly. In severe or toxic cases it should be given intravenously.

The serum sickness is often more annoying than the scarlet fever in the mild cases.

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THE PRESENT-DAY MANAGEMENT OF SCARLET FEVER*

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RECENT scientific investigations have brought about a radical change in our conception of scarlet fever. Intensive experiments have proven beyond doubt the nature and identity of its specific micro-organism, and careful, painstaking observations by experienced research workers have placed at our disposal methods of certain diagnosis, prevention and cure.

The symptomatic treatment heretofore employed has been to a large extent abandoned, and in its place we have a very successful, if not entirely perfect management of this disease. It has long been suspected that there existed an etiological connection between the streptococcus hemolyticus and scarlet fever. In 1894 Loeffler was impressed with the abundance of hemolytic streptococci present in the throats of scarlet fever patients and other observers reported the occurrence of a scarlatinal rash in certain cases of wound infection and puerperal fever.

The majority believed, however, that the streptococcus played a purely secondary role in scarlet fever and nearly all were inclined to believe that the streptococcus was responsible only for the complications or sequelae. Repeated efforts were made to produce this disease in animals by inoculations from the throats of scarlet fever patients. All such efforts proved unsuccessful, and it finally became necessary to employ human subjects for this purpose. Until 1923 no one had been able to produce experimental scarlet fever either in man or animal by inoculation with cultures of any organism.

In the autumn of 1923, Dick & Dick, convinced that laboratory animals are practically insusceptible to scarlet fever, succeeded in producing scarlet fever experi-

mentally in man by inoculating human beings with pure cultures of streptococcus hemolyticus. In their first experiments the streptococcus was isolated from a lesion on the finger of a nurse, who had at that time scarlet fever. Five volunteers were inoculated by swabbing their throats with a culture made from this streptococcus—three were not affected, one developed sore throat and fever without a rash, and the fifth developed, forty-eight hours afterward, fever, malaise, sore throat, nausea, leucocytosis, and a well-defined scarlet rash.

In order to determine whether this case of scarlet fever was due directly to the organism, or to its toxin, five more volunteers were inoculated with filtered cultures. None of these developed scarlet fever. These same five were then inoculated with the unfiltered culture, with the result that two remained well, two had fever and sore throat, and one developed typical scarlet fever. Dick & Dick then concluded that the two cases of experimentally-produced scarlet fever were due to the streptococcus hemolyticus and not to its filtered virus.

Their next step was to determine the manner in which the streptococcus hemolyticus produced the rash and other symptoms associated with it. They found that filtered cultures of this organism contain a soluble toxin, which when injected into susceptible individuals produced malaise, nausea, vomiting, fever and a scarlet rash. They next found that this toxin could be neutralized by serum from patients convalescing from scarlet fever, proving that the serum of recovered scarlet fever patients contained an antitoxin.

In 1902, Moser published a report of good results he had obtained from the use of an anti-scarlet fever serum which he had produced. Believing that if the streptococcus was the cause of scarlet fever a curative serum might be produced, he gave

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a horse repeated injections of living streptococci, together with the broth in which they were grown, his idea being to get the antigenic value of the organism as well as any toxins that may have developed in the culture.

In 1905, Savchenko showed that the serum contained both scarlet fever anti-toxin and streptococcic bactericidal bodies. In 1907, Cabritschewsky prepared a vaccine for the purpose of immunization of human beings against scarlet fever. This vaccine was made from broth in which streptococci had grown four days with the streptococci added.

In the *Zeitschrift fuer Kinderheilkunde* in 1918, Schultz and Charlton described what is now known as the Schultz-Charlton reaction. They discovered a local blanching of the scarlatinal rash in the vicinity of, and immediately following intradermal injection of convalescent scarlet fever serum. If one c. c. of convalescent serum (diluted) is injected into the scarlet skin an area of blanching occurs several centimetres in diameter. This is of diagnostic value in doubtful cases of scarlet fever.

Dick & Dick's next move was to determine the effect of scarlet fever toxin on the skin itself. They found that diluted solutions of the toxin could be used to determine susceptibility to scarlet fever in the same way that the Schick test determined susceptibility to diphtheria.

The toxin used for the Dick test and for preventive immunization is first carefully prepared and standardized. It is prepared by inoculating plain broth with pure cultures of *streptococcus scarlatinae*, to which one-tenth per cent of sterile defibrinated sheep's blood may be added. These cultures are incubated for four to six days, passed through filter paper and then through Berkefeld filters. It is standardized by diluting one c. c. of the toxin to 1000 c. c. with physiological salt solution and one c. c. with 2000 c. c. of salt solution. Skin tests are made with 0.10 c. c. of each dilution, and observation made in twenty-four hours. If the 1/1000 dilution is weaker than the standard skin test solution it is discarded.

If the reaction with 1/2000 dilution is stronger than standard greater dilutions are employed until exactly standardized.

The next step was to determine the skin test dose. This took more than one year of careful work. It was first necessary to determine the largest amount of toxin required to produce a slightly positive reaction in immune persons. Next it was necessary to determine the smallest amount of toxin required to give a positive result in susceptible persons. The proper skin test dose was somewhere between this maximum and minimum. It was finally determined that 0.1 c. c. of a carefully standardized and diluted solution was the best dose to use.

The Dick test consists of intradermal injection of 0.1 c. c. of toxin on the anterior surface of the forearm. The result is read in twenty-four hours. An area of reddening two c.m. in diameter shows great susceptibility, while one c.m. shows some degree of susceptibility. The Dick test causes less inflammation than the Schick test for diphtheria. The reaction to scarlet fever toxin is transient and consists of a superficial inflammatory oedema and not a subcutaneous induration as is found in the Schick test. In the partially immune it begins to fade soon after it appears, and at the end of twenty-four hours is of a faint dull brown or slate blue color. If entirely faded in twenty-four hours it is negative, although a positive may disappear in thirty-six hours.

In a series of such tests made in 1923, Dick and Dick obtained positive or strongly positive in 41.6 per cent of those without history of scarlet fever, and negative or very slightly positive in all convalescent patients tested. The skin test proved positive before and negative after scarlet fever attacks, and they also found that the administration of convalescent serum would change positive to negative. They therefore concluded that this skin test for scarlet fever determined individual susceptibility and numerous other investigators have confirmed their findings, as shown by articles

by Branch and Edwards, Zingher and others.

In 1902, P. Moser, in the *Wiener-Kulin, Wochenschrift*, reported a serum prepared by immunizing horses with living cultures of hemolytic streptococci, and while since then and until very recently many other antistreptococcic serums have been described, none of those immediately following his proved more efficient than Moser's serum. In 1924, Dochez and Sherman (A. M. J., 2-16-24) injected agar subcutaneously in horses and inoculated this agar with living streptococci. This serum was used in unconcentrated form and frequently produced severe serum reactions. In fact, Blake reports (A. M. J., May 24, 1924), serum reactions in all cases treated with Dochez serum.

In April, 1924, Dick and Dick (A. M. J., April 19, 1924) reported an antitoxin produced from horses by injection of scarlet fever toxin instead of the living organisms. This they further improved by concentration. The horses were given repeated injections of sterile scarlet fever toxin in gradually increasing doses. In standardizing this antitoxin the following procedure was followed: First, it was found that an amount of scarlet fever toxin corresponding to 1,000 skin test doses would cause the symptoms of scarlet fever in a mild degree in susceptible persons. They took that dose of antitoxin sufficient to neutralize this dose of toxin as a basis of standardization—one c. c. of concentrated antitoxin should neutralize 1,000 skin test doses of toxin.

Dick and Dick employ as a therapeutic dose that amount of antitoxin sufficient to neutralize twenty times quantity of toxin known to produce scarlet fever symptoms, i. e., 20,000 skin test doses. Each patient received one such dose and in the severe cases two doses were given. Their conclusions were: First, concentrated scarlet fever antitoxin pales the rash, lowers the temperature and improves the general condition of many scarlet fever patients; second, if given early the course is shortened and the liability to complications and

sequelae greatly lessened; third, one dose is enough in a moderate case.

In fifty cases there was one death from a neglected mastoid infection, no nephritis and two otitis complications. As a therapeutic dose ten c. c. of the concentrated antitoxin is employed, while 212 and five c. c. are used for a prophylactic or preventive dose.

Park, in a report made in the J. A. M. A., October 27, 1925, gives the following conclusions: that scarlet fever antitoxin given in sufficient amounts early in the disease produces striking results, and he believes it prevents complications. It is of no value after the rash has faded and has no effect on later complications. In moderate case it should be given intramuscularly, in severe cases intravenously. As a rule one dose is sufficient; if, however, fever recurs within twelve or twenty-four hours a second dose should be given. According to Parks the refined antitoxin globulin should be used, as there is much less likelihood of rash or other serum trouble in the globulin. In his experience the unrefined antitoxin gave sixty per cent of serum trouble, the globulin thirty per cent. There were no serious after effects in any case, but the serum sickness was often very annoying.

Intravenous injections in severe cases give the best results. One or two hours after intravenous injection the Dick test becomes negative. In sufficiently large doses intramuscularly the results are certain, but develop more slowly six to eight hours. Even in very severe cases, if the antitoxin is given early, in a few hours the mind clears, the throat is less sore, and the temperature less so that within six to eight hours a delirious, very sick patient is often convalescent.

Its effects on complications, such as infections of the tonsils, ear, mastoid, and cervical glands, etc., are not good, if these complications are already present, but the antitoxin will prevent the occurrence of complications if given before their development.

Robb reports in the *British Medical Journal* (January 12, 1926) that he had

splendid results with scarlet fever antitoxin when used early; in some cases the disease was completely aborted, desquamation and complications prevented, so that the quarantine time was reduced fifty per cent.

ACTIVE IMMUNIZATION

Active immunization against scarlet fever consists of the injection of gradually increasing doses of scarlet fever in susceptible individuals. (After considerable experiment, after too small a dose was at first employed, Dick and Dick obtained a very successful result by using 500 skin test doses as the first injection, 1,500 the second, 5,000 the third, 15,000 the fourth, and 20,000 the fifth. These were given five to seven days apart. Two weeks after the last injection the Dick test was made.) In five such doses they were successful in immunizing ninety-five per cent, and it was found that the immunity was present one and one-half years after. It was deemed unnecessary to give an antitoxin with the toxin, as is the case with toxin-antitoxin of diphtheria, as unlike diphtheria toxin, that from scarlet fever is not so destructive to the tissues.

With regard to active immunization against scarlet fever, Park's conclusions are: Observation on several thousand children has shown that a naturally acquired immunity against scarlatina is persistent for at least one year. It is fair to assume, he says, that as in the case of naturally acquired immunity to diphtheria, the immunity to scarlet fever is apt to remain.

In an article by Lindsay et al., appearing in the A. M. J. of April 17, 1926, entitled, "Scarlet Fever: an Analysis," the author concludes among other things: "It is possible actively to immunize susceptibles for a considerable period," but he says, "Care should be used to adjust the dose of toxin for active immunization so as to avoid serious reactions in those who have an unusually small amount of natural antitoxins.

SCARLET FEVER WITHOUT RASH

For many years a condition has been recognized in which an angina, with fever,

malaise, nausea, vomiting, etc., appeared among those in contact with cases of scarlet fever, such as nurses, attendants, etc. You will recall that earlier in this discussion I referred to some of the volunteers, used by the Dicks, as having developed sore throat, fever, etc., without rash. Baginsky and others, many years ago, referred to this condition as "Scarlatina sine Eruptione." In an article in the A. M. J. of April 10, 1926, there appears an article by Stevens and Dochez entitled, "Occurrence of Throat Infections with Streptococcus Scarlatinae Without a Rash." During the winter of 1924 and 1925 an epidemic hemolytic streptococcus infection occurred in the Presbyterian Hospital of New York. This manifested itself as scarlatina, acute throat infections, and infections of wounds. The streptococcus hemolyticus was found in the throats of both scarlatinal and non-scarlatinal throat cases. After careful study of these cases the following conclusions were arrived at:

1. Scarlatinal infection of the throat may occur without a rash.

2. This type of infection may occur in individuals showing negative skin reactions to scarlatinal toxin.

3. The Dick test is not a reliable index of immunity to such throat infections with streptococcus hemolyticus.

It is only fair at this point to state that a review of recent Italian literature on scarlet fever shows that the Italian pediatricists are entirely at variance with us in this matter. Firstly, they claim that Di Cristina has isolated the real micro-organism of scarlet fever, which he describes as an ovoid organism 0.2 to 0.4 microns in size. He claims to have grown this organism, which he recovered from the bone-marrow and blood of scarlet fever patients, on suitable culture-media, produced the disease by inoculation in rabbits and in humans, and recovered the organism from inoculated individuals. Furthermore, the Italians claim to have developed a protective and therapeutic vaccine which they have used with marked success.

With regard to the work done in this

matter by American investigators, they have this to say:

1. The American authors who claim that the hemolytic streptococcus is the causative organism of scarlet fever have not been able to isolate streptococci of the same group from all patients examined.

2. That streptococci, identical with morphologically, culturally and serologically, with that to which scarlet fever is attributed, has been isolated from healthy individuals as well as from those suffering from other diseases.

3. The clinical picture resulting from injection of hemolytic streptococci was not proven to be scarlet fever, resembling more febrile streptococcus erythema.

4. None of Koch's laws has been established for the streptococcus hemolyticus in relation to scarlet fever.

5. It is present purely in the role of a secondary invader.

After careful investigation of this subject, together with some personal experience with these new ideas, I have come to the following conclusions:

1. The streptococcus hemolyticus has been proven to be the causative factor of scarlet fever, all the requirements of Koch's dicta having been met.

2. The Schultz-Charlton reaction is of considerable diagnostic value.

3. The Dick test is of value to determine susceptibility.

4. The results with scarlet fever antitoxin show that it has a limited prophylactic value.

5. Scarlet fever antitoxin, given early, has given excellent results.

6. Scarlet fever antitoxin is of little value late in the disease, and has no influence on complications already present.

7. Active immunization with toxin has not had time in which to present convincing conclusions.

8. Serum sickness is still too prevalent and too troublesome, although in all probability this objection will be overcome.

DISCUSSION ON PAPERS OF DRS. LEVY AND JACOBS

DR. WILLIAM KRAUSS, Memphis: The discovery of the fact that a soluble toxin can be separated from a streptococcus was so startling it was difficult for many of us to grasp the full significance of that. We are very well aware that biological therapeutics must be of the passive kind. In other words, it must be already performed in an animal or its serum. Since in past experience there was no evidence that a toxin could be formed by any streptococci, it was not possible to produce a serum which would have anti-toxin properties. They have all been disappointing. We have been injecting it in great quantities and deluded ourselves into believing did good.

The great merit of the Dick discovery is not yet fully understood, that hemolytic streptococci can be made to produce a soluble toxin and that this has specific antigenic properties for scarlet fever.

Scarlet fever, therefore, is a condition of intoxication with a specific toxin in contradistinction to other septic conditions caused by the streptococcus in which we have purely a bacterial infection, in other words, a bacteremia. I cannot conceive of scarlet fever entirely apart from some systematic involvement with the streptococcus. Evidently we have there present a soluble toxin which stimulated production of antibodies resulting in the recovery of the patient.

Some of the Germans also are skeptical about the American discoveries. They come out with the statement that the American experimenters had stopped experimenting too soon, that they had not cleared up many points.

The positive demonstration of the specific toxin separately from the streptococcus brings forward an entirely new conception of the streptococci infections.

DR. WILLIAM LITTERER, Nashville: The streptococcus hemolyticus in causing scarlet fever reacts in two ways. It acts like a double-edged sword. First, it gives off its toxin which produces the rash and other constitutional phenomena and secondly the microorganism invades different tissues of the organism, producing complications such as nephritis, middle ear, sinus trouble and the like.

The administration of antitoxin not only blanches the rash and relieves the constitutional symptoms but it evidently has in some way a bacteriocidal influence upon the streptococci as evidenced by fewer complications.

Recently an article by Dochez appeared in the Journal of the American Medical Association in which he stated that there are certain streptococci of the scarlatinal type that produce a systemic condition without producing a rash. It is a hemo-

lytic streptococcus found in sore throats evidently not giving off a toxin. Scarlet fever antitoxin apparently does no good in these cases. To my mind it is questionable whether such a condition should be called scarlet fever.

The researches of the Dicks have thoroughly established the etiology and management of scarlet fever and made it possible by which the manufacture of an anti-toxin is put on a standard basis. It was Moser who, twenty-five years ago, used an anti-hemolytic streptococcal serum on scarlet fever with wonderful results in most instances. His method of manufacture was very similar to the Dicks but he had no standard to guide him, hence his method fell into disrepute.

I especially rise to condemn the promiscuous practice of the administration of antitoxin as a prophylactic measure. It has been agreed by eminent authorities including the Dicks, Dochez, Park and others that contacts with scarlet fever should not be given the antitoxin. Park states that only nine out of one hundred that are exposed to scarlet fever will contract the disease. The administration of antitoxin may unnecessarily expose the patient to serum reaction (anaphylaxis) and at the same time sensitize the individual against other serums made from the horse. Immunity in some cases only lasts eight to ten days. Where an individual has been exposed to a case of scarlet fever the proper plan is to keep the person under close observation and apply the Dick test for immunity. If upon the slightest manifestation of the disease, to immediately administer the antioxin. Of course where close observation is not possible such as in remote districts I would think it wise to give a prophylactic dose to those cases that have been exposed. The question as to how long should a scarlet fever patient be quarantined? The old plan was about three weeks. Administration of antitoxin, especially when given early, has reduced very perceptibly the quarantine period according to quite a number of cases coming under our observation. The plan to release these cases should be similar to the one employed in releasing a diphtheria case. Before a scarlet fever case would be released a nose and throat culture or a culture from other sources, depending upon complications, should be made. This is easily accomplished by blood agar plates and determining the hemolytic streptococci. We are using with success blood agar slants over which swabs from the nose and throat are rubbed. We should not have a set period of quarantine as formerly but simply be guided by cultural methods as we do in releasing diphtheria cases.

DR. GILBERT J. LEVY, Memphis: I would like to emphasize what Dr. Litterer has said, especially as to the contacts. It is not necessary, and I do not personally recommend it any more to those exposed.

I think it is worth while to make a Dick test as well as a culture for streptococcus hemolyticus from the throat. The proportion of people that contract scarlet fever is exceedingly small compared to the number exposed. If they are positive you can start active immunization. I have great hopes for it in scarlet fever, the same as I have for toxin antitoxin in diphtheria. I hope the time will come when it will be definitely settled as to the standardized dose of the antitoxin, and we can start it on a wholesale scale.

DR. ARTHUR G. JACOBS, Memphis (closing): There are three points I wish to touch on briefly in the discussion. The first is the attack made upon the American investigators by Italian pediatricians. They claim we have not established the laws of Koch's Dicta, and therefore have not proven that the streptococcus hemolyticus is the cause of scarlet fever, and that they have discovered an ovoid organism which they state is the true cause of scarlet fever.

In defense of what has been done by American investigators, I wish to say that they have complied with all the requirements of Koch's Dicta. Firstly, they secured from the finger of a nurse having scarlet fever, the streptococcus hemolyticus. This nurse had a lesion on her finger. They grew this streptococcus, so obtained, in a culture medium. They inoculated the throat of another human being with this culture and so produced scarlet fever in this second individual, and then recovered the organism from her.

Another point I wish to discuss is, shall we use scarlet fever antitoxin as a preventive measure? If we are called to treat a case of scarlet fever, where there are other children, shall we give the other children scarlet fever antitoxin? I have in mind twelve cases in my private practice in whom I employed scarlet fever antitoxin as a preventive measure. None of them developed scarlet fever. Two or three of them developed temperatures running as high as 103 and 104, this temperature lasting from three to seven days. Nine of them developed rashes. In some the rash extended all over the body and in all cases there was more or less itching, in some cases great misery. Some had purely local manifestations at the site of injection, such as redness, infiltration and pain.

One mother said: "I would rather the child had scarlet fever than to go through all of that; in fact the other child that really had scarlet fever did not have nearly the trouble that this one did in whom you prevented it." My experience does not justify its use as a prophylactic. Children are not so likely to contract scarlet fever as we once thought. Statistics show that less than ten per cent of those exposed contract it. The protection so afforded only endures about two weeks. One of these children actually developed scarlet fever five weeks after I gave the scarlet fever antitoxin as a prophylactic.

The use of scarlet fever antitoxin in severe scarlet fever is highly commendable, its results being most gratifying.

The question has been asked, What effect will the employment of these newer ideas have on the

length of quarantine. In the British Medical Journal, January, 1926, this point is brought out. The writer claims that the new measures reduce the length of quarantine fifty per cent.

IMMUNIZATION AGAINST MEASLES WITH CONVALESCENT SERUM*

WATT YEISER, M.D., Columbia, Tenn.

MEASLES is a disease that is too often treated with indifference as to its seriousness, whereas it is, with its complications, one of the most serious diseases which we have to treat. And a patient is far from well when his fever has dropped to normal and eruption completed; it is at this stage of the case that the real dangerous time for more careful attention has really set in, as the least exposure is very likely to develop complications that quickly prove fatal or very rebellious to treatment.

Preventive medicine is of so much greater value than therapeutics of any kind that I feel justified in presenting this paper on the "Immunization Against Measles" as of some value. The old saying, "that an ounce of prevention is worth a pound of cure," is very applicable here.

The use of the convalescent serum in the treatment of scarlet fever is now very well known and many are claiming that a serum has been made that does fine as a preventive and treatment; however, this does not come within the domain of this paper, and it is just mentioned as it is along this same line.

Measles is ninety-five to ninety-nine per cent contagious, with an incubation period of about ten to fourteen days, and sometimes eighteen days. The death rate from an epidemic that we have just gone through with in Columbia and Maury County has been causing us some alarm. There has been more pneumonia, middle ear and mas-

toid troubles than any epidemic that I have seen since I have been in practice.

From the clinic of Robert C. Davis there comes the report that he has been using convalescent measles serum for the last five years without the development of measles in any instance after its use. He states that many of his cases having gone through subsequent epidemics without developing the disease. In a personal communication he states that he believes the immunization is permanent.

Richardson and Connor report six cases that were definitely exposed and these were given the convalescent serum and none developed the disease.

Degkwitz, assistant attending physician at the Munich University Children's Hospital, reports having immunized 172 cases, none of whom developed measles.

McNeal, of Rochester, reports the use of the convalescent serum in sixteen cases, and was successful in the prevention of twelve, with four having the disease in a very mild form.

Manchet and Reiche report 155 cases with failure of only eleven, and these had it very mild.

William H. Parks reports the injection of 1,500 cases that had probably been exposed, but of 979 of these he had definite data as to their exposure, and of these ninety-two per cent were successfully immunized and ninety-eight per cent incompletely successful. No reactions or bad effects were noticed from the use of the serum in any of the above cases.

In all these above reported there are 1,324 known contacts who received the im-

*Read before the Tennessee State Medical Association, Memphis, May 11, 12, 13, 1926.

mune serum with the result that only fifteen cases developed the disease. Failure only 1.1 per cent.

In the Journal of the American Medical Association of April 3, 1926, under the New York City items, I notice that a life insurance company of that city is bearing the expenses of the City Health Department to send an official to secure blood from convalescent patients from whom the attending physician may obtain the consent and \$10.00 to \$25.00 would be paid to poor patients who wished to be paid for the specimen. The New York City Health Department has been using the convalescent serum for immunization against measles for the last four years. They sent an official to the Berea University in Kentucky, where sixty students contributed specimens for this purpose.

REPORT OF CASE

I was called to see an eleven-year-old child with the usual symptoms that are present in the onset of measles and I told the mother of this child that I was sure that her child had measles; she did develop a very exaggerated case, and this patient had a very delicate little niece that lived in the same home and was with her all the time, and the exposure was all that could be for her to develop the disease. The mother of this little one was very much alarmed at the thought of her having to have her go through with it, as this epidemic had been so severe. She asked me if there was any way to prevent her developing the disease, and I replied that we could use the serum from some of our convalescents, if we could get a donor.

I was fortunate in locating a young woman that was about five or six days convalescent; that is, five or six days since her fever had gone down normal. I drew off fifty c. c. of blood and from this I centrifuged and got all the serum that I needed for the case. I tested it for syphilis by the Kahn method and it was negative, and then I gave this child five c. c. the first injection and ten c. c. each on two successive days, with no reaction or irritation at the

points of injections and she has not had measles yet.

PREPARATION OF SERUM

In the preparation of the serum take about fifty or sixty c. c. for every subject that you want to immunize. Centrifuge it until all the serum is clear or you can take a little more blood and wait over night for the serum to separate and avoid the centrifuging. Drain the serum off and place it in the ice box or add enough trikresol to make it .2 of one per cent, as this will preserve it nicely, as it has been kept for nearly a year at a time this way. Always test all specimens for syphilis, as one can never tell when you might transmit the disease without it. I had the experience of getting some syphilitic serum once that was four plus, and would have given it to a little girl had I not taken the precaution to test it first. The immunization must be given before the sixth day after the contact.

One very important thing in this is that one in the family or a neighbor can have the disease for several others without subjecting them to any risk whatever.

DISCUSSION

DR. J. J. HOBSON, Memphis: There is no doubt but what the use of convalescent measles serum has quite an important place in the field of preventive medicine. There are several things about the immune serum that makes it impossible for the general practitioner to use it. In the first place, it is not taken from an animal; it is taken from a person convalescent from measles and for that reason it has not been placed on the market and is only available in our medical centers where a sufficiently large number of patients have had measles recently. There seem to be a good many difficulties about the use of the serum. First, you must be especially careful that the patient is Wassermann free and negative for tuberculosis. Second, although the doctor states that in some cases immunity lasts for a long time, the literature states that immunity is only present for about eight weeks and then the patient may again be susceptible to measles. For these reasons, and a good many others, it is not advisable to use the serum routinely in the average epidemic. There are some occasions when it is advisable. First, it is indicated for the young and congenitally weak infant who has been exposed. Second, for the child who is just convalescing from some

acute respiratory disease, for instance, from an acute influenza or pneumonia, in whom you would not dare risk getting another respiratory infection such as measles. In such a case the patient should always be immunized with the immune serum. In the third place, in the presence of epidemics in orphanages and children's homes where we know the mortality from measles is very high. Here all contacts should be immunized with immune serum. That has been done in some of our orphan homes in Nashville, though in one of the asylums the serum did not work and practically every patient who got it developed measles. This fact I should not think should be used in condemnation of the use of the immune serum because it was proved that the serum was not properly handled or taken care of by the fact that a large number of cases in this instance developed abscesses following the use of the serum. Then, too, we are using it in the Pediatric Department of the City Hospital where we are right now in the midst of an epidemic of measles. We have had a number of cases break out in the children's wards and we are using routinely the serum to immunize every other child in the wards no matter what his particular illness may be. It is certainly indicated in older children who are convalescing from tuberculosis or who have an old healed tuberculous lesion or who are tubercular contacts. These cases we can easily see might suffer greatly from an infection of measles. Then, too, it should be used in those children who have been subjected to pertussis and have not had measles.

Several different types of serum have been used. Some of the workers in Europe are using dried convalescent serum. They take serum, dry it and put it up in ampules. They claim this may be used satisfactorily. Then, too, Hermann has attempted to make a serum from the nasal secretion. He takes some of the nasal secretion and dilutes it with normal salt solution, centrifuges it and injects two or three drops of the filtrate into the nostrils of the patient he wishes to immunize. He claims he has a good effect and an active immunity that will last a long time. That is the only work I have seen in a review of the literature where this type of immunity is reported.

Knowledge of the dosage is quite important. It is quite necessary that the patient be given the measles serum before the fourth day. If you give it after the fourth day, say the fifth or sixth, double the dose. If you give it after the sixth day, you are not sure you are going to get any immunity. The patient may have measles but it is as a rule very light.

DR. WILLIAM LITTERER, Nashville: I want to agree with the statement of Dr. Hobson that the immunity given to such cases as related by Dr. Yeiser does not last very long. It is true we obtain immunization but it is a passive immunization which is only short lived. The same is true

with diphtheria and tetanus antitoxins and also scarlet fever antitoxins. It is distinctly advisable that one should never give scarlet fever antitoxin as a prophylactic since only about nine out of 100 will develop scarlet fever even when directly exposed.

Another question should be raised concerning the advisability of administering convalescent serum to measles contacts or those suffering with the disease only mildly. We know that the administration of convalescent serum is only a passive immunity which means that it is only transitory. Such a procedure only protects the individual for a short while and later on in life the person will contract measles which usually goes harder with adults than with children. I am of the opinion that the wisest plan would be to let a case of measles take its course and if severe symptoms should arise to give the convalescent serum. Still another plan would be to administer the convalescence serum a day or so after the onset of the disease. By such a procedure it will thus give the patient a chance to manufacture an active or permanent immunity to the disease so that later in life he will not develop it again. The too early administration of convalescent serum may interfere or cut short any active or permanent immunity induced by the disease itself.

The latest advances towards the solution of measles, especially with reference to etiology, prevention and treatment, is a very convincing article by Ferry and Fisher of Detroit, which appeared in a recent issue of the Journal A. M. A. They claimed to have found the cause of measles. They succeeded in isolating a streptococcus viridans which differed from that described by Tunnicliff. From this streptococcus of measles they were able to manufacture a toxin and in turn produce an antitoxin which latter would act as a curative agent to those suffering with measles. They also devised a diagnostic test made from the toxin. Such a test would detect those that are immune from the non-immune. The test is similar in principle to the Schick test of diphtheria and the Dick test of scarlet fever. They also claim that it is possible to permanently immunize individuals with the toxin obtained from this special streptococcus viridans. It appears from their studies and experiments that they have presented a very valuable contribution.

DR. GILBERT LEVY, Memphis: We have been particularly fortunate in Memphis the last few years in getting this serum. In the Isolation Hospital we have received quite a number of adults with measles, contrary to the rules laid down in text-books that adults are free from measles. From these adults we have collected quite a large amount of serum. After testing the serum to prove it was tuberculosis and syphilis free, we collected it in five cc.

ampules. This serum is available for any physician in Memphis. One physician whose child had been immunized twice passed through two exposures recently and did not contract measles. Some of us have seen the advantages. I am glad that Dr. Litterer brought out the point about giving it late and causing a mild attack. I have used it on the eighth or ninth day and measles appeared in a light form, rash and temperature of 101, subsiding within two days' time.

I would like to issue a sharp warning about measles serum. Serum sickness does occur with this immune serum. I think it is advisable to give two or three minims of adrenalin chloride, 1-1000 solution before injecting the measles serum, and I think it is a good idea to use it in all cases where a foreign protein is used. We have protected two institutions with the serum. In one the serum was used late and therefore we did not get immune cases. So far as possible we have been using three to five cc. given intramuscularly, usually in the buttocks or muscles of the back.

DR. W. R. BLUE, Memphis: I would like to ask the essayist to say a word about the complications. I would like to hear from the men in the state relative to complications. It seems in this epidemic we had lately, the complications re-

ported by the essayist were very severe. My personal experience is they have been mild.

I would like to say regarding the use of the convalescent serum that I would not advise routine use of it in the prevention of the disease. We are using so many serums, toxins and antitoxins that our children are going to become sensitized and we may in the future have to desensitize any child we give serum to.

Relative to anaphylactic shock I think rather than given adrenalin, I would follow the method of Bezredka or modified Bezredka, being a few minims of the serum every fifteen minutes, increasing each dose for four or five doses to desensitize the patient and then give the remainder of the dose. You will probably not have any reaction. If you do, it will be an anaphylactic reaction and not an adrenalin shock. I do not believe we can distinguish between the two clinically. If you give a patient who is sensitive to adrenalin another dose of adrenalin it is like adding fuel to fire.

DR. WATT YEISER, Columbia, (closing): As to the permanency of the immunity, I am only able to give the report from the Davis Clinic, he reporting that he believes it is permanent.

As to complications, we have had the worst epidemic with more complications reported by all physicians in our county than we have ever had.

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J. F. GALLAGHER, M.D. -----Editor

JULY, 1926

EDITORIAL

**WHAT SHOULD THE PRACTICING
PHYSICIAN READ**

The answer to the above question would be about as indefinite as the answer to—how big is an apple? It depends very largely on the character of one's practice. The specialist in any line must try to master the technique and the literature of his chosen field. The very busy doctor, no matter what his line of work, is forced by lack of leisure hours to select his reading with unusual care.

The reading of a general practitioner must similarly be influenced by the time he may devote to it. Even so, there are rather definite limits to its scope. Our aim is results—to do the best we can in diagnosis and in treatment; to make as few mistakes as possible, to bring to bear on each problem the best that our professional training can utilize.

Where will the busy man, with limited hours for reading, find the most useful literature? The answer to this question comes promptly and forcibly if we take the time to recognize and ponder over our errors. Autopsies, surgical explorations and the lapse of time constantly bring to every one evidences of failure to do the best that they could have done. And in the majority of instances where an avoidable error has been made, it will be found that the error was due to a failure to use the fundamentals of medicine, the methods and the facts that are the common heritage of all.

To the busy general practitioner, then, the reading and re-reading of standard texts on medicine, surgery and on physical

diagnosis should be urged. Read a few pages of your new Osler—you should have one if you have not—and you will be surprised at how many things you have let slip from your daily thought. Do the same with your surgery and your physical diagnosis.

They are written in plain language that any one can understand. The newer and less established conceptions and procedures are to be scrutinized and some day properly appraised, but until they come to be standardized and accepted the great majority of physicians can find much help in the fundamentals.

Every doctor should take a good weekly journal and read it. He cannot get far behind if he keeps up with the Journal of the American Medical Association.

W. H. W.

DEATHS

Dr. Wm. L. Medling, of Dyer, aged 49, died July 1. Dr. Medling was a graduate of Vanderbilt School of Medicine, Nashville, in the class of 1904 and was a member of the Gibson County Medical Society at the time of his death.

Dr. Samuel J. McGrew, of Shelbyville, aged 71, died July 19. Dr. McGrew was a graduate of the University of Pennsylvania School of Medicine, Philadelphia, in the class of 1881.

NEWS NOTES AND COMMENT

Dr. W. D. Haggard, of Nashville, was married to Miss Lucile Polk Holman, of Nashville, on the 27th of July.

Dr. John L. Dies announces the opening of offices at 1212-13 Exchange Building, Memphis. He will limit his practice to general surgery and cuistoscopy.

The Sanders-Warr Clinic of Memphis

announces a change of name to The Polyclinic. There will be no change in the clinic organization.

WE NOMINATE FOR THE HALL OF FAME

Dr. E. R. Zemp: Because he is the President of the Tennessee State Medical Association; because he is a gentleman of genial disposition and of a highly ethical temperament; because he is one of the outstanding practitioners of internal medicine in the state, and because he is a lover of sports, especially football.

Dr. J. A. Witherspoon: Because he is an ex-President of the American Medical Association; because he is the outstanding orator of the profession of the state; because he has taught medicine to as many students as any other teacher in the South, and because he has always been a friend of the young physician.

Dr. Olin West: Because he made the best executive officer the State Board of Health ever had; because he has made more than good as Secretary of the American Medical Association, and because he still retains his membership in the Tennessee State Medical Association.

Dr. S. R. Miller: Because he has perhaps given more of his time without compensation to our State Association than any other member; because he has administered our Medical Defense with unusual ability and efficiency and because he has missed only one meeting of the State Association in the memory of the oldest member, and this because of a very valid excuse which Dr. Miller will have to explain.

Dr. Battle Malone: Because he is an outstanding surgeon of his native village of Memphis and the state; because he is a gentleman of the

manner born, and because he is the only chairman of the Committee on Arrangements who has had the nerve to dispense with the dispensing of "that stuff" and let each man pay for his plate at the banquet.

MEDICAL SOCIETIES

The Rutherford County Medical Society was reorganized July 7 with a full membership composed of the following: J. F. Adams, M.D., Woodbury; A. N. Gordon, M.D., Fosterville; B. R. Kelton, M.D., Lascassas; M. B. McCrary, M.D., Woodbury; B. R. McKnight, M.D., Auburntown; B. L. Ousley, M.D., Christiana; S. B. Smith, M.D., Overall; E. B. Allen, M.D., J. S. Allen, M.D., V. S. Campbell, M.D., A. J. Jamison, M.D., M. B. Murfree, M.D., J. C. Overall, M.D., W. T. Robison, M.D., J. A. Setot, M.D., B. M. White, M.D., S. L. Wiles, M.D., J. R. Gott, M.D., of Murfreesboro.

A large crowd of doctors from Carroll, Henry, Weakley and Benton counties, as well as a number of visiting physicians and surgeons, were in attendance at the annual meeting of the Tri-County Medical Society at McKenzie, July 13. Among the visiting doctors were Dr. W. D. Haggard, Dr. L. W. Edwards, Dr. W. H. Witt, Dr. Richard A. Barr, Dr. Duncan Eve and Dr. J. M. Lee, of Nashville; Dr. Willis Campbell, Dr. G. R. Livermore, Dr. W. T. Black, and Dr. O. S. Warr, of Memphis, and Dr. S. M. Herron, of Jackson.

The second summer meeting of the Tri-County Medical Society, composed of physicians from Loudon, Monroe and Roane counties, was held at Sweetwater, July 15. Dr. H. L. Fancher, of Chattanooga, the honor guest of the day, delivered a very interesting address. The next meeting will be held in Loudon County, August 15, the place to be decided later.

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POTT'S FRACTURE*

DR. DUNCAN EVE, SR., M.D., F.A.C.S., Nashville

MR. CHAIRMAN and Members of the Section: I want to acknowledge that in this instance I am not prepared, and that is because I did not expect to attend. But when I found that my son could not be present, I decided to come. Therefore you can understand my nonpreparedness in the presentation of a paper. But I am not going to have that as an excuse, as our former colleague, Dr. George Price, would suggest by making a few "frost-bitten" remarks.

I just proposed a moment ago to consider this subject on account of its very great importance, and further, because, as many of you will understand, from medical journals that you have had occasion to read, that a good deal has been said in regard to this fracture in which it has been attempted to establish rather a new pathology. But it has not perhaps been successful in any regard in the doing away with preconceived ideas.

The fracture I allude to is Pott's fracture. It is true this fracture has been treated by a very old plan, because of the fact that the splint that has been employed has been named from the first introducer, a distinguished Frenchman by the name of Dupuytren. Then he perhaps relegated

it to others after his long service of usefulness and it has been called by the names of several other surgeons.

But you will understand that by whatever name it is called it has been so simple in its application and usefulness that it was thought it ought to be more complex, and hence some surgeons have really made efforts at trying to complicate the plan of treatment of this well known and exceedingly serious fracture.

This fracture is usually produced from two forces. First, that of eversion of the foot and, secondly, abduction of the foot and leg. The two forces distinctively seem to operate differently in the production of the fracture.

In eversion we find the force is exerted through the internal lateral ligament and causes a break of the internal malleolus squarely off at its base; it then presses the external malleolus outwards, rupturing the tibio-fibula ligament and breaks the fibular close above the external malleolus.

When abduction occurs as a cause the preponderating force again is this same internal lateral ligament of the ankle joint. We find that through the effort of abduction of the limb there occurs an oblique fracture of the anterior portion of the internal malleolus, or more frequently rupture of the anterior portion of this process that is fractured, and as in the former case

*Read before the Association of Railroad Surgeons Section, Tennessee State Medical Association, Memphis, May 11, 12, 13, 1926.

(from eversion) rupture of the tibio-fibula ligament, and an oblique fracture of the fibula several inches above the external malleolus.

We have merely gone over this particular pathology in a manner only in order to know what we have to do in the reduction of these two types from eversion or abduction.

Next let us mention the symptoms. We have in this fracture everything in the way of the general signs except crepitus. Crepitus is rarely determined in a Pott's fracture from eversion. We have displacement, and that displacement is very pronounced. We have besides this a very great mobility of the ankle joint, not only laterally but in its antero posterior movements.

There are three symptoms of pain. The first one is over the fracture of the internal malleolus, which, of course, if it is from abduction, then upon the anterior aspect. If from eversion, at the base of it. The other point that provokes pain is pressure right over the middle of the joint anteriorly. That, of course, is due to the rupture of the internal lateral as well as the tibio-fibular ligaments. Pressure there provokes great pain. Another point of great satisfaction is that we find there is a distinct fracture of the fibula with deformity unquestionably it is easy to determine. Of course, if it is from eversion, it is low down. Perhaps only the tip of the malleolus or the malleolus itself is entirely detached.

If it is from abduction the fracture can be up as far as one-fifth of the length of the fibula, about five inches, usually about three and one-half to four inches.

These points are easily discernible. And the question, gentlemen, of the deformity itself is almost an index to a Pott's fracture. You can note the deformity and can unerringly say, "That is a Pott's." You can't state until you examine the limb that it is a Pott's from eversion or abduction; but it is a Pott's. The deformity in itself makes often the diagnosis. Hence, taking all into consideration, we can hardly err in the determination of this fracture.

As to the matter of treatment or reduction, it is very simple. The foot, of course, is not only turned outwards, but the heel is drawn up, and we find that there is very distinctive deformity that is easily recognized. The deformity of rolling outwards, the heel being elevated, is such that you cannot help but recognize this fracture. By the fact of the deformity alone you are almost guaranteed making the diagnosis because there is no other injury like it.

In the case of a diseased condition that would cause this particular deformity we would have the history which would clear it up without trouble. With the abduction cases we usually have little rotation outwards and but little elevation of the heel.

How can the astragalus with the foot be elevated? Because the tibio-fibular ligament is ruptured it allows the astragalus to pass in between the two leg bones, and that is the way we get upward displacement.

The reduction should never be attempted except under an anaesthetic. I doubt whether you could relax the parts even if there was free motion. Of course, in relaxation being accomplished with an anaesthetic, you want to produce exactly the opposite position from which you find the foot in the dislocated state. Therefore, make extension upon the foot to begin with so as to bring down the heel and thus disengage it from between the two leg bones in its upward position. Then the foot must be turned in. In other words, you want to bring the foot in as normal a position as it is possible, just opposite to the position of deformity.

There have been a great many methods of treatment employed, some of them perhaps good. But because of this old-time method of Dupuytren employed by our forefathers in surgery, being so old and easy of application, it has really been thought that there ought to be some newer and better plan of treatment. We are going to be perfectly frank to confess that we do not know of any.

No plan that has been called to my attention, or which I have ever observed in use

by other surgeons, is at all comparable with the Dupuytren splint. And that is what I like to call it, because Dupuytren laid more stress upon its employment than any of the other old surgeons.

What is it? Nothing but a plank long enough to extend from the middle of the thigh to beyond the sole of the foot and wide enough for the whole length of foot to rest against. You can cut off a portion of that width if you desire for holding of the leg.

I will show you about this splint (indicating), it is a plank, which is eight or ten inches wide, as we want the width for the foot. It is perhaps too simple to describe. But, at the same time, we want to be certain it is understood.

We desire to make this splint soft enough for the reception of the internal portion of the foot, that is, the edge of the foot and the internal lateral aspect of the leg. In other words, it passes from the middle of the thigh, upon the inner side of the thigh, and to the inner surface or edge of the foot.

Now, the point that comes up is the question of the pyramidal compress. We make this with towels; we will say this is the first towel. Now, the second one is placed just a little above it, and so on, a third, fourth and fifth. Of course, it is not placed as far as we have it here. It is just about a half inch one above the other.

The fracture being reduced, the thing is to maintain the reduction. You can't get that immobilization by any other plan so satisfactorily as that we are describing, as by use of the Dupuytren splint. Upon this pyramidal compress of four or five towels and with the leverage effect we have with a figure of eight bandage holding the foot down, you can see at once that you have got that individual so that with any kicking or movement he can't disturb the relative position of the bones that are fractured.

We say bones because it is frequently complicated. Sometimes we have a fracture higher up of the fibula, sometimes a fracture of one of the tarsal bones, especially the os calcis.

With this treatment carried out for three

weeks we find that the dressing can be removed and reapplied without any great trouble at all. It does not require adhesive plaster. It does not require any great pressure by the bandage. All you want to do is to get the patient by the first three weeks, then a plaster cast will answer every purpose for three weeks longer, making six weeks in all.

DISCUSSION

DR. A. F. RICHARDS, Nashville: I want to say a word relative to this. I don't remember now whether Dr. Eve told me what the Dupuytren splint was when I was in school or not.

DR. EVE: That was too long ago; that is the reason you can't remember.

DR. RICHARDS: It was probably before the Dupuytren splint was invented.

Anyhow, that very fracture in my limited practice has given me as much concern and about as bad results as any fracture I ever had to deal with.

Of course, gentlemen, my personal experience with it wouldn't be authoritative at all, but to me it was my guide. I undertook in my early practice to take care of a Pott's fracture on a board, but, for reasons known to myself later, that is, my lack of having enough cases, and my lack of understanding as to the function of the bandage and pad, I used to make this pad out of just the bolts of cotton. I grant you I did not get as stable a pyramidal compress as would be made by the towels.

But early after I had made two or three right crooked jobs I changed my mode and it has been my practice ever since, down to the present, when I get that ankle reduced I immediately apply a temporary dressing, and about the fourth or fifth day I put it in plaster of Paris. I have been doing that ever since. It has given me so much better results than I formerly got, of course I have followed it.

Should I have been taught a little more about the application of the pyramidal compress and the tipping of that foot, possibly I might have gotten better results.

I have no criticism of Dr. Eve's exposition of the matter, but I just want to acknowledge to you gentlemen that my practice has been plaster of Paris in these cases. We do not get perfect results always.

DR. J. M. CLACK, Rockwood: I would emphasize one point and that is the reduction should invariably be accomplished while the patient is under a general anesthetic following x-ray diagnosis.

I have been quizzed on Pott's fracture in that rapid way in which Dr. Eve used to exclaim, "remember." Nearly all present have had the same

teaching under him. I certainly would attempt this towel pyramid if I had one today.

Have had fairly good success with the plaster of Paris treatments of this fracture and look on it with favor, especially in fractures occurring below the knee.

DR. DUNCAN EVE, SR. (closing): I am a little disappointed that there was not more discussion, especially as I look around and see so many students that I had the pleasure of teaching. I think at least half, yes, more than half of this audience is made up of gentlemen I have hollered at. "Remember!" It is a great satisfaction, I can assure you, gentlemen. I am glad to see that you are members of this Association and glad to know that you are railroad surgeons, for I know that you are prepared on fractures.

I am now teaching fractures. I commenced at the first of the session, and I am still on fractures.

I have given some little attention to this subject, and the more attention I give it the better I like it. When you consider that fractures constitute one-seventh, at the time I first taught you, of all injuries, and now at this time they are one-sixth. No wonder the subject is important. I don't mean that an injury cannot occur that is not more serious than a fracture, but if a patient has injuries he is more than apt also to have a fracture.

In my work upon this subject I stated one-seventh. But it is getting more frequent and important. There is an attempt to have fractures relegated to the Orthopedist. A great many of these fractures should go to the Orthopedist, especially those of the foot, as the particular specialty is perhaps understood.

Of course, this is a great big subject and I have only touched upon the borders of it. I do want to state that a great deal more could be said. I am going to advise you gentlemen that the only criticism I have to offer in using plaster of Paris is that you better first use the old Dupuytren splint and come to plaster of Paris later, in two or three weeks' time. I believe you will get better results.

The object of the plaster of Paris, of course, is immobilization; but with the atrophy of the limb, which is always greatest at first, we find frequently that it does not fit later, and therefore with the atrophy of the limb the plaster of Paris is too large, and we have, therefore, deformity following its use.

Use the Dupuytren splint for three weeks, and then use plaster of Paris when the atrophy has occurred, and the most of it that is going to occur, and you will find then you can allow your patient to locomote on crutches without inconvenience.

These fractures are sometimes compound. It is astonishing how often we have as a permanent result, ankylosis. And nothing could be more serious than a stiff ankle, to say nothing about sometimes deformity accompanying it. When we have one that is compound there is nothing but through and through drainage of the ankle that is going to prevent perhaps more serious results.

Now, Stimpson, a very great authority, names three points of pain we quoted a few moments ago, uses plaster of Paris strips laterally as well as antero-posteriorly. He is a very great authority and I believe that he gets good results.

A very distinguished surgeon, now dead, Dr. Joe Bryant, of New York, who was one of my professors in surgery at Bellevue Hospital Medical College, used lateral supports entirely. He makes them of board or of plaster of Paris. He didn't care which. He claimed both were good.

In our opinion a Pott's fracture ought not to be attempted to be reduced without an anaesthetic. I don't believe, gentlemen, in the average case that you can reduce a Pott's without the patient is anaesthetized. I have never tried it because, you know, that fellow is suffering. Every movement you make of that limb is almost a stab in his heart. He is suffering excruciating pain.

Lastly, I want to state that the average Pott's fracture is not compound, for it is a more serious one when comminuted or compound. Maybe the os calcis or astragalus may be broken. If that occurs you will have ankylosis.

Now, "remember," an anaesthetic should always be given. Secondly, while the patient is under that anaesthetic completely reduce that fracture. If you can't do it well first, try again and keep on. You have got the other foot to compare it by, and it may help you to know you have a perfect reduction when you have accomplished same. All you have to do is to apply motion and force in the opposite direction.

Use your Dupuytren first and then plaster of Paris afterwards, and I believe you will get good results.

THE DIAGNOSIS OF GALL BLADDER DISEASE*

JACK WITHERSPOON, M.D., Nashville

THE diagnosis of gall bladder disease is made on symptoms. It is not made by laboratory reports or by the x-ray, but by the interpretation of the symptoms given by the patient and family in taking the history of the complaint.

Cholelithiasis must be regarded as an advanced stage of cholecystitis. In fact, the average age of patients showing gall stones is 49.8 years for males and 44.4 years for females, and with non-calculus gall bladder disease is 43.3 and 40.8 years, respectively.

Patients usually give a ten or eleven-year history of upper abdominal distress in cholecystitis, and five years later with certain cholesterol, or fatty disturbance in the blood, stones are to be found in the gall bladder or ducts. McCarty said that the average duration from the onset of symptoms to operation in appendicitis was two and one-half years, in cholecystitis four and nine-tenths years, and cholelithiasis six and one-half years.

Infection is not believed to play the most important part in the precipitation of cholesterol that results in gall stones.

Gall stones are found at any age from birth on. Eusterman collected 117 cases in children and young adults, and while the rates of one-third male and female hold good in adults, there is no sex ratio difference in the young.

No one should undertake to set forth the symptoms of gall bladder disease unless he use at some turn the phrase of fair, fat and forty, and belching gas.

Dr. Cheney, of San Francisco, has classified gall tract symptoms in a way acceptable and appreciated by most clinicians.

He had the background of twenty odd years experience in the hospital wards and a like number of years of private practice. From the last eight years of his private

practice he collected 114 cases of proved gall bladder disease and divided them into four groups.

Group 1 is cases giving a history of attacks of gall stone colic with perfectly good health between the attacks.

Group 2 is cases giving a history of attacks of gall stone colic like Group 1, but between the attacks they suffer with indigestion.

Group 3 is cases of indigestion of various types: cases that might be mistaken for gastric ulcer, or constipation, or appendicitis, but for very occasional spells of discomfort about the gall bladder brands them as cholecystitis.

Group 4 is patients who complain much of stomach trouble over a long period of time and are put down as gastric neurosis or achylia gastrica. There are no attacks of billiary colic to direct attention to the gall bladder, not even the less serious discomforts described in Group 3.

Suddenly, after a lapse of years, an attack of colic followed by jaundice occurs, or perhaps the patient submits to an exploratory operation.

The indigestion complained of is typical if the whole picture is viewed. When one fails to study the picture as a whole the complaint may suggest peptic ulcer, or constipation, or chronic appendicitis.

In the early stage of gall bladder infection there is fever, leucocytosis, soreness under the right costal margin.

The fever may go as high as 102 degrees and is associated with rigidity of the upper right rectus muscle. The gall bladder wall is inflamed and at times one may feel a mass over the distended viscus. As the lymphatics take this toxin to the liver we may find pain going through to the back and a mild icterus in the skin. This attack is differentiated from appendicitis by the

*Read before the Tennessee State Medical Association, Memphis, May 11, 12, 13, 1926.

absence of localization about McBurney's point.

Colic in this stage may be caused by thick dehydrated bile blocking the cystic duct. Mild colicky attacks are not unusual. The patient vomits if the peritoneal coat of the gall bladder is seriously affected.

Heyd, McNeil and Graham have shown that damage to the liver is early as shown by enlargement and tenderness of that important organ.

Focal infections play an important part in cholecystitis and frequently the removal of tonsils, an abscessed tooth, or a diseased appendix may abort a serious involvement of the gall bladder.

The initial symptoms of gall bladder disease are probably not colic, or jaundice, or gassy indigestion, but symptoms to be expected from an inflamed intra-abdominal viscus.

This attack, like a fulminating appendix, may go on to serious proportion, but usually it subsides and with irregular exacerbation there comes a period of quiet.

This is the stage of chronic indigestion and occupies the third or fourth decade of life.

The patient has an indigestion marked by gas in the stomach and bowels, belching and bloating, with always a little tenderness at the tenth right costal margin.

Moynihan says: "The symptoms are referred by the patient to the stomach. The complaints are of fullness, weight, distention or oppression of the epigastrium, coming on one-half to three-fourths of an hour after meals, relieved by belching, dismissed on the instant by vomiting. Eating acid or greasy foods may be followed by a sense of tightness and the patient becomes restless; and if not in acute pain obtains relief by bending the body forward or by belching. It is called heart burn."

If hepatitis is marked the patient develops a sallow complexion. Large meals are followed by undue discomfort and the patient attempts to diet herself. She abstains from sweets or fats, or leaves off the last meal and takes olive oil and Epsom salts.

The gallbladder viewed by the surgeon

at this stage may be smaller than normal, thickened or adherent to the duodenum or stomach. Its mucous coat is denuded in spots and presents the strawberry appearance. It usually contains thick tarry bile and a quantity of sand or even cholesterol stones.

The liver is rounded of edge, striated, and according to Heyd and McNeal, gives the histological picture of hepatitis.

The pancreas and pyloric end of the stomach show evidence of disease carried by the lymphatic. Some ten, fifteen or twenty years after the beginning of the disease a stone becomes lodged in the cystic duct and the big pain occurs. It usually has no relationship to meals or comes after a day or two of a grumbling indigestion.

The pain is in the right side and goes through to the back and up to the shoulder, a pain that hangs on and causes sweating and vomiting, a pain not to be relieved by soda or hot water or mustard plaster, but at times demanding more than one hypodermic of morphin for relief. Next day the patient feels well except sore and tender in the upper right quadrant; swelling of the duct is followed by bile in the urine and jaundice of the skin in the next forty-eight hours.

If the stone is not tightly wedged it drops back into the gall bladder with relaxation of the spasm or may pass on into the larger common duct. It is sure to be followed by other stones and other attacks.

Jaundice may be caused there by swelling of the extrahepatic ducts or blocking of the common duct by stones, but it is rarely a complete obstruction.

Stasis of the bile may invite extraneous infection of pus-produced germs; empyema of the gall bladder results with chills, fever and leucocytosis, or the gall bladder, blocked off from the liver, may become distended with its own mucoid secretion and we have a state of hydrops of the gall bladder.

Physical examination may give no useful evidence at times. It may bring a complaint of soreness on pressure at the right costal margin, but this is subjective evidence.

Physical examination more frequently discovers rigidity and tenderness of the right rectus muscle and sense of fullness in the region of the gall bladder for that organ is so far under the liver it is itself rarely palpated.

Examination, however, with the left hand lifting the liver forward and the right hand paralleling the ribs, will bring out more resistance in the upper right quadrant than in other parts of the abdomen, and should a mass be clearly felt, tumor is a better diagnosis than cholecystitis. Jaundice following an attack of colic, however, surely means gall bladder disease.

Courvoisier's law is not to be ignored.

Laboratory examination includes blood count, urinalysis, stool examination, examination of the stomach contents, examination of the bile as obtained by the duodenal tube, and various new tests of the blood serum.

There is no blood count typical of jaundice or cholecystitis.

Urinalysis is quite valuable.

Bile appears in the urine when the serum bilirubin reaches three to five milligrams per 100 cc. blood. This is a little over twice the normal bilirubin content and is, therefore, quickly detected.

Stools lose their normal, brown color, due to diminution of bile additions.

The stomach content is in most cases low in free hydrochloric acid, and in twenty to thirty per cent of cases a state of achylia is present.

The diagnosis of gall tract disease by the study of bile as obtained through the duodenal tube after installation of magnesium sulphate, peptone and other anti-spasmodic solutions, has furnished material that has burdened the medical literature since the method was described by Lyons.

It is not discredited by adverse criticism and much can be learned by conservative investigation.

Claims of segregation of the bile specimens have been the cause of most of the criticism, but the new recognition of the associated disease of the liver and gall blad-

der gives added value to this method of investigation.

The Rosenthal method of application of the 'phthalein test of liver function became popular, but the discovery that this dye was excreted by the liver to be reabsorbed and reappear in the blood serum has cast doubt on its usefulness.

Graham and Cole's x-ray method of visualizing the gall bladder and the various interpretations of this procedure have undoubtedly added to the precision of gall bladder diagnosis.

It is based on the powers of a normal or near normal gall bladder to concentrate bile and the sole ability of the liver to excrete this dye.

We must call attention to the work of Silverman and Munvillé, of New Orleans, that vindicate the Lyons test at the same time it facilitates diagnosis of cholecystitis. Indophthalein was given their patients, and when the gall bladder showed a full shadow a Rehfuß tube was introduced and magnesium sulphate solution instilled.

Successive pictures show the gall bladder emptied itself of the opaque bile when it was normal and less expelling occurred when it was diseased.

By the Vanderberg test one can estimate the bilirubin in the blood and differentiate the bilirubin that has been handled by the liver from that which the diseased liver cells have refused to handle.

In obstructive jaundice bilirubin of extrahepatic origin passes through the polygonal cells and into the bile. The outflow of bile is blocked in the extrahepatic ducts and the bile is reabsorbed into the blood as bilirubin and gives a direct reaction by the Vanderberg test.

Indirect reaction is given by bilirubin not half marked by liver cell action and indicate hemolytic jaundice.

Toxic or infectious jaundice gives a delayed or biphasic reaction.

PROGNOSIS

The main question in the prognosis of gall bladder disease is how is the liver. Babcock says that at each operation for

gall bladder disease the surgeon must note the appearance of the liver, its consistency, firm or nodular; its edge, rounded or sharp or shrunken; its color, the appearance of striations and compare the left and right lobes and estimate how much of the liver is hurt.

The prognosis depends on the heart. Many patients in getting rid of a gall stone have died of coronary occlusion.

Before the work done by Walters at the Mayo Clinic, fifty per cent of the deaths following operations on jaundiced patients occurred from hemorrhage. The slow clotting time of jaundiced blood is not understood but Walters showed that the giving of calcium chloride, ten per cent solution intravenously, before and after operations cut down the mortality.

Jaundiced patients need bile in their digestive tracts and bile salts in capsule or tablet form is a useful addition to treatment.

CONCLUSION

Gall bladder disease is twice as frequent in females as males except in young people. The diagnosis is best made by the history and this is facilitated by following the grouping of symptoms as by the method of Dr. Cheney of San Francisco.

Foci of infection rather than typhoid fever play a major role in causing cholecystitis.

It is intimately associated with disease of the liver, appendix, pancreas and stomach.

Chief among laboratory aids in diagnosis are the Vanderberg test and cholecystograms after the method of Graham and Cole and Menees.

The prognosis is dependent on liver

damage, heart involvement and the control of jaundice.

DISCUSSION

DR. O. S. WARR, Memphis: There is not very much left to say on the subject of the diagnosis of gall-bladder disease, the doctor has covered the subject so thoroughly. I would like to call attention to one condition that I am sure is very frequently confused with gall-bladder disease especially gall-stone colic. Given a case of acute upper abdominal pain, characterized by a sense of distention and upward pressure, with pain radiating to the right shoulder, occurring in an individual past middle life, the diagnosis is relatively easy. Unfortunately the diagnosis is not always so simple. There is one condition which I believe is more often confused with gall-bladder disease than any other and one which must be kept in mind at all times, because an error in diagnosis means oftentimes the life of the patient. I refer to angina pectoris, or so-called abdominal angina. Just in the last few days this fatal mistake was made. A patient giving a history of long-standing gaseous dyspepsia, such as Dr. Witherspoon has referred to, consulted his physician because of an attack of upper abdominal pain, not very severe. His condition was considered a simple one of "acute indigestion." The condition was prescribed for and the patient allowed to go downtown to his office. He had not been there long before the pain recurred. He called for the physician again and before he got there the man was dead. A careful inquiry into the case made it very apparent that this was a simple case of angina pectoris mistaken for acute indigestion.

If we keep in mind that there is no such thing as acute indigestion, that although many times these acute attacks are preceded by some error in diet, these patients usually learning that there is one or more foods that they do not tolerate, these mistakes will be made very much less frequently; but particularly we physicians should keep in mind always that upper abdominal pain may come from regions above the diaphragm, and when it does it is a much more serious matter than gall-bladder disease.

THE IMPORTANCE OF MENTAL EXAMINATIONS*

W. SCOTT FARMER, M.D., Nashville

TODAY there are over 300,000 patients in hospitals for the insane in the United States—60,000 new patients admitted yearly—and from the point of view of cost, misery, and the numbers of our people involved, mental disease constitutes a larger problem than any of the others. There are as many beds for the insane in this country as there are hospital beds for all others combined. In Tennessee we have three thousand confined in the three hospitals—not counting county hospitals—with an annual commitment of seven or eight hundred new patients. The majority of our institutions all over the country are full and begging for more room. It can be said, without fear of contradiction, that no other disease, or group of diseases, is of equal importance, from a social or economic standpoint.

"Nothing emphasizes this fact more strongly than the report issued from the Surgeon-General's office relative to the second examination of first military recruits drafted in 1917. Twelve per cent of these were rejected on account of nervous or mental disease. The number finally disqualified for service reached a total of 67,000. Mental integrity is now looked upon as a military necessity and is one of the important requirements of the soldier. It has been demonstrated conclusively that only men of the most stable mental equilibrium can withstand the stress and strain of modern methods of warfare, nor are peace time requirements any less exacting. In commercial competition the law of the survival of the fittest is practically absolute." (May).

The feeble-minded often inherit wealth, but seldom acquire it. Vaccination for the prevention of smallpox is compulsory; isolation of communicable diseases dangerous to the public rigidly enforced, while at the

same time we allow many paranoiacs the freedom of the country and they occasionally assassinate a President. Psychopaths are not infrequently elected to office, and epileptics are not disqualified from running an automobile. Engineers of our fastest trains must not be color blind, but are occasionally the victims of the most fatal of all diseases—general paresis. The navigation officer of a trans-Atlantic steamer may be dominated by delusions which escape observation because not looked for. Important trials where lives and property are at stake have been presided over by an insane judge; insurance policies may be issued for large amounts on individuals suffering from an incipient mental disease; a bank clerk may steal the funds and the world cry out "thief!," but it may not be impossible he is a paretic with grandiose ideas. A good per cent of the inmates of penal and reformatory institutions have some form of mental disease. At Sing Sing, N. Y., over fifty per cent had some nervous or mental disorder; at the Auburn State Prison sixty-one per cent; at the Indiana State Prison forty-five per cent; at the West Virginia Prison sixty per cent; at the Georgia Prison about forty per cent had some nervous or mental trouble. Many of the convicts come in the class known as recidivists—repeated offenders. Of 133,047 persons admitted to the penal and correctional institutions in New York sixty per cent had served previous terms; of 25,820 received in Massachusetts during one year 57.4 per cent were recidivists. Justice Rhodes of England is responsible for the statement that of 180,000 convictions in England in one year more than 10,000 represented persons convicted upwards of twenty times before. Recognizing the relationship of mental disease often with crime, Massachusetts, some two years ago, passed a law that if a person was indicted

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before a grand jury for a capital offense—or any offense—the second time, before he was eligible for trial he had to be turned over to the lunacy commission for an examination, who made their report to the criminal court clerk and which was open to inspection by both prosecution and defense. The first eighty-eight cases they found eleven insane and ten mental defectives, and two were constitutional psychopaths, or about one-fourth of abnormal mentality.

The general practitioner is often the first one called upon in his daily work to give an opinion as to someone's testamentary capacity, or again may be called upon to certify whether or not a citizen is insane, and whether or not he should be deprived of his liberty and the right to control his property. The physician is often asked by the court to testify in the capacity of an expert as to the sanity or insanity of someone who has committed some crime. We should always remember the term "insanity" is often a fruitful source of confusion. The term insanity, as usually used, is a legal term and does not indicate any special disease, any more than the term dropsy, so when a physician is called in court as a medical witness he should make it plain in giving his testimony that there is a difference in medical insanity and legal insanity. The aim in medicine is the restoration of the individual to his normal mental state—the law seeks the protection of society and is not concerned with the individual except in his relation to the social body.

(Bowers): When we speak of medical insanity we mean the patient has some disease causing mental symptoms. The symptoms of mental disease are divided into two classes: psychic and somatic. The mental symptoms may be further classified into disorders of intelligence, disorders of emotion, and disorders of volition. The somatic symptoms may be divided into physical symptoms and neurological groups.

To make a diagnosis of mental disease it is absolutely necessary to make a complete and thorough physical as well as a

mental examination, and in the majority of instances a chemical and microscopical examination of blood and spinal fluid and urine, and the good physician will study the art of observing a patient as well as the art of questioning him. There is often a peculiar expression on the face of certain types of mental disease, noticeable to an experienced psychiatrist, and we should observe the build, the voice, the clothing, the gait, the speech, and the general demeanor of the patient. Is the patient calm, excitable, depressed, or unduly elated? Are there any peculiar gestures or mannerisms? Is the patient mute or talkative, quiet or constantly in motion? Is the patient retiring, bashful, fearful, shy and secretive? Is there excessive mental and physical activity, boastfulness, exaltation, abnormal optimism, is he self opinionated or blustering; or does the patient appear worried, easily moved to tears, easily discouraged, or slow in mental and physical movements? Is he non-communicative or unduly depressed? (paranoid type.) Is he exceedingly suspicious and afraid to trust those about him? Are his feelings hurt, and does he complain of discrimination on the part of others, seeing sinister motives in others—at the same time justifying their own conduct? Is the conversation chiefly about themselves, and given to the excessive use of the pronoun I? Does the patient have outbreaks of temper, from trifling causes? Many patients may complain without urging them about their physical or mental ills, and in so doing give expression to delusions or hallucinations, which may be the key to the analysis of the patient's mental condition. The emotional status should be carefully recorded. Is the patient unduly elated, euphoric or happy, out of all proportion to his physical condition and environment? Is he indifferent—and is the indifference mild or of a pronounced degree? Is there clouding of consciousness? Is there negativism? Does he refuse to talk or eat, or does he do just the opposite to what is asked of him. Some patients are excitable, irritable, threatening, and at times given to assault. Is the patient's

conversation relevant and coherent and does he reach the goal idea? Does he have flight of ideas, or statements, and words disconnected, and does he repeat some senseless phrase? The conversation may throw light on the diagnosis, remembering that hallucinations may be auditory, visual, olfactory, gustatory, tactile or somatic, according to their content. He may hear people talking about him and making disrespectful and uncomplimentary remarks about him, converse with the Lord; the wind blowing through the trees may appear as spirits talking to him; he may feel that he smells disagreeable and vile odors, or they may be thrown into his room through the keyhole or over the transom; or he may smell the most fragrant perfumes at night, sent him by secret lovers or friends, or he may taste metallic substances in food, complaining that he is being poisoned and that vile substances are being put in milk and water; may see rodents, snakes, beautiful women, and all manner of living objects and may even say he has seen God and the angels. He may feel bugs or snakes crawling over the skin or may feel as though his limbs are missing; that his blood is dried up; that he had no head; something alive in his stomach, etc. Delusions, if present, may be systematized, unsystematized, transient, fixed or changeable. He may believe that he is being continually insulted, robbed of his money or cheated of his political rights; grandiose ideas are common—he may believe he is a millionaire, that he is ruler of the universe, that he is God, and possesses the greatest mentality in the world; the strongest as well as the richest man who ever lived, and have no insight whatever into his condition, and may or may not be oriented. The memory of the patient should be tested by asking him questions of his past life, his occupation, marriage, children, education, diseases, injuries, etc. It is necessary to get a detailed history of patient's entire life in order that a correct history may be made—both family and personal history, history of present illness, and a thorough physical examination, including the eyes, to

see if the pupils react to usual tests, as well as tendon reflexes—in fact the five senses should be thoroughly tested for irregularities, when making a mental examination. Take note of any tremors, history of convulsions, or any loss of spincteric control, headache, aphasia, vomiting, pulse, state of nutrition, etc. The general symptoms of the psychoses are so varied and complex, and numerous, that we could not enumerate all of them in a short paper. But our purpose should be to find out whether there are any disturbances of consciousness, the presence or absence of hallucinations or delusions, disorders of orientation, disturbances of perception or apprehension, defects of attention, disorders of memory, disturbance of train of thought, defects of reason or judgment, abnormalities of the emotions or impairment of the will power, which lead to disorders of conduct. The examination should be thorough, searching, and in detail, and if a medico-legal case, all questions asked by examiner should be recorded. Due allowance should be made for lack of educational advantages and his general experiences should be carefully weighed before conclusions are drawn concerning his mental status—(Bowers). Remember it will take about three hours for the examination of an average case; also remember we frequently have to observe a patient a number of days, and examine them several times, before we may be able to form a correct conclusion.

A large per cent of all sickness or complaints made to the physician has a psychic or mental side. When we stop to think that one in about three hundred of our population is insane, and added to this number the mental defectives and feeble-minded of all descriptions, and a host of neuresthenics, you will get some conception of the value of proper mental examinations. Hospitals care for the comparatively smaller group of the insane and feeble-minded, whereas the larger group of mentally disordered remains in the community, and because of this mental disorder comes into frequent conflict with the law, but unfortunately the mental factor is not

always recognized and as a result our most dangerous insane are often found in our penal institutions, serve a short sentence and return to society to repeat the same, or a worse, offense. Society always looks at the crime, but seldom studies the individual offender and as a result we have in our penal and reformatory institutions the insane, morons, high grade imbeciles, sex perverts, syphilitics, consumptives, epileptics and demented, and degenerates of every description lumped together and labeled sinners and criminals, and prescribe punishment as a cure for the job lot, and no wonder we read so much about what ex-convicts are doing, and a great hue and cry goes up all over the country in regard to law enforcement. This state of affairs will continue until we medical men step in and notify the world that to medical men belong medical subjects. During my experience of nearly ten years in dealing with the mentally diseased I have done work for our state prison and various courts, and have had many veterans sent me from North and South Carolina, Georgia, Florida, Alabama and Mississippi, and you would be surprised at the number of people floating around from state to state, sometimes in the penitentiaries and sometimes in hospitals for the insane, because society looks at the crime but fails to properly examine the patient and properly classify him, on account of the law's method of dealing with this delinquent class, who too often serve a short sentence and then given their freedom. I am not criticising any official, but speaking of a system, neither am I claiming that all men who commit crime have a diseased mind, but there is a good per cent of those charged with crime who would be permanently segregated if they could have a proper mental examination at the proper time, and even though the plea of insanity may be claimed at the time of trial the verdict of twelve men, who never studied medicine a single day in their lives, decides whether the accused is or is not mentally diseased. For the protection of society, and future generations, all people charged with crime should be referred to a lunacy commission, say of

three physicians of experience in mental disorders, this commission to be appointed by the court and make their report to the court as to the mental status of accused, whether normal, insane, feeble-minded, etc., or commit them to a hospital for nervous and mental disease for a period of observation. A period of hospital observation for all persons committing crimes, in whose defense the plea of insanity has been raised, is by far the best method yet devised for securing impartial and accurate opinions, silencing popular clamor and avoiding prolonged and sensational trials, and saving expense to the state.

Remember, there is probably no type of crime that has not been committed by the insane, therefore we need mental examinations before the accused is tried and convicted, and also mental examinations before any criminal is returned to society. One-fourth of all patients in hospitals for the insane show symptoms between sixteen and twenty-five years of age, many of which are mistaken for hysteria or neurasthenia. Even a convulsion may mean dementia praecox or paresis, and be one of the early symptoms. Remember the legal profession, as well as many medical men, believe in partial insanity, but we should remember that the mind functions as a whole, and it is just as sensible to say that a person is partially insane as to say a woman is partially pregnant, or a man has a partial attack of appendicitis. The only good a hypothetical question asked a medical man in court is to confuse the jury and bring into disrepute the medical profession. Remember the lawyer always asks the doctor in court, when the mind is a question at issue, "Does the man know right from wrong?" Knowing right from wrong is no test, for medical insanity, as any physician working in state hospitals will tell you. The majority of our patients know the difference between right and wrong (morally), but the trouble with the insane is they do not stop to think what is right, but react to their delusions and hallucinations, obsessions and compulsion. Therefore, we need mental examinations in connection with physical examinations in our schools, in our police and juvenile

courts, in our penal and reformatory institutions, criminal courts, and various other places that carry a great responsibility to the public health and welfare of our nation, as any state, to be prosperous intellectually, morally or financially, is dependent upon the mentality of her citizens.

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DISCUSSION

DR. R. E. LEE SMITH, Knoxville: I have been appointed to discuss the paper. The Doctor has presented a paper of very great importance, as I see it.

I, too, happen to be one of those fellows who has been dealing with just such characters as he has for a number of years. They say that when we get to dealing with that class of people we get nutty, and think everybody is wrong. Fortunately for me I practiced medicine for about thirty-five or forty years before I commenced doing this special work, and I went into it with the absolute determination to not get lopsided. As a rule, specialists look through their own glasses, and can't see through the other fellow's. But I have partitions in mine, and I try to look at it from a common sense standpoint.

Now, the doctor has given us a very fine paper. I realize another fact, too, that happens frequently by way of comment—that papers of this type read to an Association of this kind generally fall

flat, for the reason that the Doctors say, "When I get people crazy in my office I am going to send them to the asylum." And they generally dismiss it with that, without thinking of it, or giving the case any concern. The quicker they get them off their hands the better they feel about it.

Now, the title of the paper is the "Importance of Mental Examination." Just at this particular time there is a great wave being promulgated before the world on the importance of periodic health examinations. I just want to say along with that very thing goes the examination that the Doctor is just now telling you about in his paper. No examination is complete without a mental examination.

I think, too, these mental examinations should begin very early in life. I believe it should begin almost with the birth of the child. I am sure an examination of the mental condition of the child ought to be done especially at the school age, or before. Upon the entrance of the child in school the mind of that child should be examined.

We have lots of tests. I don't mean to say that every child must react exactly to Binet's test, or some modification of that test, but it can be applied with a common sense idea. There is no such iron clad rule for making these examinations. It has to be done in a common sense way.

I think everybody with good judgment who will give themselves time to think about it a little will feel that it is important.

I cannot add a great deal to what Dr. Farmer has said. He had just about finished with the part of his paper where he was going to tell some of the important reasons why the examination should be made, and his time happened to be up. For that reason I am going to stop my discussion and let him complete the reading of the paper.

TUBAL INSUFFLATION—A DIAGNOSTIC METHOD OF DETERMINING THE CAUSE OF STERILITY*

W. T. BLACK, M.D., F.A.C.S., Memphis

HERE are so many etiological factors that cause sterility that the subject is too extensive a one to be dealt with in this paper. Therefore the subject of fetalism and infantilism will be omitted, except to say that little can be done in most cases of fetalism. In infantilism a great deal could be said in special conditions regarding the treatment in many of the amenable cases. The subject of spermatoxins, or the study of the serum, cannot be discussed in this paper; however, it would be amiss not to state that the semen should first be examined in every doubtful cause for sterility. Dickinson and Carey, in their recent contribution upon this subject, state that "the male is at fault in forty-five per cent of the cases." Chronic endocervicitis with its plug of mucous and the chemical changes in its secretion is a well-known cause. Various other etiological factors, such as uterine displacements, tumors, constitutional diseases, irradiation, operative removal of organs, etc., could be enumerated as causative factors. This paper will deal with only the part played by the tubes as etiological causes of sterility and the determining of the patency of the tubes by insufflation through the ostium abdominale and intrauterine insufflation. The Rubin test has become a practical means of determining the patency of the fallopian tubes. Peterson, Aldridge and many others have contributed much to the subject of tubal insufflation. Long before this test was described by Rubin, tubal insufflation from within, where the abdomen has been opened, has been used by the speaker and, I suppose, by many others as a means of determining whether the tube was patent or not. In sufflation of the fimbriated ends of the tube with a syringe inserted into the

ostium abdominale will cause a ballooning out of the tube down to the isthmus, if the tube is not destroyed, but does not tell whether the isthmic portion is open or not. The introduction through the uterine cavity of carbon dioxide by the Rubin or a modification test either at the time of an abdominal operation or in the absence of an operation, is a useful and practical method of determining the patency of the tubes. Conservation of the tubes by determining their patency at the time of an operation is a very essential procedure. Many tubes will be saved by using this method in doubtful cases, where their removal is questionable. A jumbo syringe and a pipette inserted into the uterus at the time of operation answers this purpose admirably well. Furniss, in 1921, suggested air instead of oxygen for testing tubal patency. Where air or carbon dioxide gas is forced through the uterus and tubes during an abdominal operation, care should be exercised by properly packing off the fimbriated extremities, so as to insure against infection, if present. The air or gas will be heard whizzing through the openings of the tubes and a movement at the end of the tubes will be noted. If any doubt as to the patency, the end of the tube may be inserted into a small container of water, when gas bubbles will be noted. Where the abdomen is not opened and the method used only for diagnostic purposes, a stethoscope placed over the tubal area will assist you to determine whether the air or gas is passing through; however, the mercury gives you a practical working basis with almost the accuracy that you find in blood pressure reading.

Pain under the diaphragm or shoulder is a well known sign. The presence of gas can be determined positively by the x-ray. This pain passes away in a very short time, unless a large quantity of gas is used, and

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can be changed in location by changing the position of the patient. It does not interfere with the patient's returning to her home or to work, when used properly in your office. Owing to the manner through which the isthmic portion of the tube runs and to spasm of the uterine portion of the tube, anodynes, or belladonna, assists to relax where spasm is present. An anesthetic, where your efforts have been futile, is desirable to insure a positive diagnosis of obstruction. Geist, Hermstein and Heustadt have pointed out that while the intramural part of the tube may run direct in some cases, in others the tube may be angular or convoluted, making it impossible to probe or even to introduce gas through this portion. In such cases an anesthetic to relax will be beneficial. The lumen of the isthmic portion of the tube is only 0.5 to one m.m., therefore probing a tube via of the ostium abdominale is not met with success, insofar as reaching the uterine cavity is concerned.

It is a well known fact that most tubal closures are found at the fimbriated ends of the tubes. Kennedy, in a study of insufflation of the tubes with sodium bromide solution, states that the tubes are found closed at the isthmic portion in 30.8 per cent and at the fimbriated extremities in 69.2 per cent. "In the microscopic examination of some thousands of tubes in the pathological laboratory of the University of Michigan no complete closure of the tubes except at the fimbriated extremities has been noted. The interstitial portion may be closed by fibrous tissue, or proliferation of the submucosa and muscularis, the condition being an obstruction rather than an atresia." If the above statement is true, the intraabdominal tubal insufflation has considerable merit. It is best, however, if testing for tubal patency at the time of operation, to introduce carbon dioxide gas or air through the uterine cavity, which will assure one of an absolute result as to their patency. In simple utero displacements where air will only go through when the mercury reaches nearly to the 200 mark, the condition can be corrected by

wearing a dressing for a few months, allowing the congestion to subside, then gas will pass through without nearly so much pressure (Aldridge). It is well to remember, as Giles states, "That practically eleven per cent of female sterilities are due to tubal disease. In women under twenty-four years of age it is higher, reaching 14.4 per cent. Add to these 4.4 per cent of cases due to blocking of the fallopian tubes by peritonitis, and we have an average incidence of fifteen per cent of cases of sterility due to pathologic tubes. It will then be seen that one out of every six or seven women owes her sterility to closed tubes."

By using the Rubin test as a diagnostic means for proving tubal obstruction a few cases may become patent by the pressure from the gas, thereby allowing the ovum and spermatazoa to come in contact and allow fertilization to take place. The indication for treatment will often be revealed by this test, showing in many cases the futility of your past treatment. In many cases operations will be avoided by a correct diagnosis. The speaker has used Rubin's method, or modification, in a number of cases with advantage and satisfaction, without operation. He has also used the test of tubal insufflation, both by the introduction of air through a syringe or carbon dioxide through the uterine cavity at the time of operation.

Will report only a few cases to demonstrate the rationale of insufflation. The following cases are cited to prove the value of insufflation as a diagnostic method when the abdomen is opened and in the absence of an operation.

Case 1.—Mrs. A. D., 23 years of age; married five years. Consulted me for sterility on September 24, 1924. Menstrual history negative; twenty-eight-day type, five days duration. Menstruated one week before coming to office. Case was referred to Dr. S., who stated that for one year each month she had had a dilatation of her cervix with the thought that she might become impregnated soon after menstruation. The Rubin test proved her tubes to be obstructed, the mercury rising to 200, which signifies an obstruction. Spasm must be ruled out by giving an anesthetic, belladonna or morphine in doubtful cases. It is seldom necessary to use any agent fortunately.

Case 2.—Mrs. A. W. F., age 28 years; married four years; sterile. Gave history of leukorrhea,

irregular menstruation for past three months, headaches, frequent urination. Menstrual history: Puberty at fourteen, twenty-eight-day type, seven days duration, free, dysmenorrhea, passes clots. Pelvic examination revealed a mucopurulent discharge coming from the cervix with an erosion of the cervix, otherwise negative. September 18, 1925, cauterized her cervix and tested her tubes by Rubin test. Found the tubes open, although had expected them to be closed, as she gave a history of a chronic pelvic infection. In less than three months she became pregnant. (Desired result probably due to cauterization.)

Case 3.—Mrs. T., 23 years of age; married four years; sterile. Consulted me for dysmenorrhea and sterility. The Rubin test revealed carbon dioxide gas passing through the tubes before the mercury reached eighty points, showing that the tubes were open, and that it was not necessary to operate. A dilatation was performed for her dysmenorrhea.

Case 4.—Mrs. R. P., age 18 years. Consulted me for chronic pelvic infection with the usual symptoms of such an infection. After opening the abdomen the left ovary was found to be destroyed, which necessitated its removal. Both tubes were adherent and enlarged, showing chronic inflammatory changes. The question arose as to whether the tubes should be removed or not. The tubes looked as though they should be removed, but after the use of the Rubin test the tubes were found to be patent and were left in with good result.

Case 5.—Mrs. H. M. B., 30 years of age; married twelve years; sterile. Dysmenorrhea and amenorrhea at times. Menstruated three days and passes clots. Her pelvic organs were negative. She was desirous of having children. Used Rubin's test and found the tubes to be patent. With the exception of some hypo-endocrine disturbances could find nothing abnormal. Finding her tubes to be patent, sent for her husband and had him examined for spermatazoa, which were absent.

Case 6.—Mrs. S., 20 years of age. Admitted to the Baptist Hospital, Memphis, Tenn., with acute exacerbation of a chronic pelvic infection due to a gonorrheal infection. After the acute symptoms subsided her cervix was cauterized and a laparotomy was performed. A tube ovarian abscess on one side and a badly diseased tube on the other side were found present. Very dense adhesions were present. Uterus retroverted and fixed. After liberating the adhesions of both tubes they both appeared as if they should be removed. They were very red and angry in appearance and both larger than your thumb. Due to the patient's youthfulness decided to introduce air through a jumbo syringe and test the patency of the tubes. The left side on which the ovary was abscessed was found to be entirely closed and was removed with the ovary. The right side was patent and the tube was saved. This case demonstrates the value of testing the tubes at the time of operation to determine their patency. In many cases the lumen of the tubes will be found open, although the pathology may appear hopeless, in so far as conservation of the tubes are concerned.

The above few cases are sufficient to demonstrate the possibilities in testing for

patency of the tubes both at the time of operation and without operation. Case No. 1 demonstrates that the treatment being given was absolutely useless, the case being strictly a surgical one. Cases Nos. 2 and 3 teach us the value of testing the tubes, which showed them to be open. These patients had expected to be operated, but it was proven to be unnecessary. Case No. 5 shows that the male should be examined, as well as the female. The other cases, four and six, show that the tubes can be conserved by means of introducing air or gas at the time of operation. A jumbo syringe and a pipette is sufficient for diagnostic purposes, where the abdomen has been opened. Carbon dioxide is used only when testing for fallopian tube patency in non-laparotomized patients.

While a great many things have been stated to extol the virtue of tubal insufflation, a word as to the danger must be mentioned. Never use uterine insufflation only when strict aseptic precautions are observed. Never use it in acute Bartholinitis, vulvo vaginitis, ureteritis, endocervicitis, nor in an acute or subacute pelvic peritonitis. It should never be used until you are sure the patient is not pregnant. Do not use it too soon after menstruation, for fear of forcing endometrial tissue back through the tubes into the peritoneal cavity. If some of the endometrium should be loose and has not been thrown off by natural channels, then it would be possible to have a transplantation of endometrial tissue so well described by Sampson.

Rongy states that "very obese and cardiac patients should not have their oviducts insufflated for fear of syncope, or possibly death."

In conclusion, will state that tubal insufflation is a safe procedure in the hands of competent gynecologists, but dangerous in cases where care has not been exercised in the selection of patients for insufflation. Many patients will be spared needless operations and others will retain their tubes that have in the past been sacrificed. A certain per cent of tubes will be opened

by this test, allowing impregnation to take place.

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FRACTURE OF THE PATELLA*

HENRY M. Cox, M.D., Nashville

THE patella is a sesamoid bone developed in the tendon of the quadriceps muscle. It is of value in the perfect operation of the knee joint, its shape, size and mobility enabling it to be used as an efficient fulcrum in extending the leg. The medial and lateral borders of the patella receive the insertions of the vastus medialis and lateralis muscles. The anterior surface of the bone has a fibrous membrane—ossification is usually completed at puberty.

Although located in an exposed and unprotected position, the patella is fractured infrequently in comparison with other bones. However, when fractured there is little difficulty in recognizing it, and especially if the case is seen soon after injury. When the fracture is transverse it will be found frequently that the proximal end of the bone has been pulled up out of place by the quadriceps. The ends of the bone fragments can be distinctly felt, most usually, although if in addition to an extensive extravasation of blood into the joint cavity, the prepatellar bursa is filled with blood or other fluid, some of the evidence may be obscured. Sometimes a gap of more than two inches will be found to intervene between the pieces of bone. The principal symptom, apart from pain, is inability to extend the leg or raise the heel from its bed. The time-honored symptom of crepitus sometimes may be interfered with by an interposing blood clot or torn piece of periosteum, but usually it may be elicited when the leg is extended. Swelling is immediate and pronounced, rapidly increasing for several hours after injury. In all cases the extent of the fracture should be ascertained by the use of the x-ray.

The lateral portion of the aponeurosis is the chief factor in extension of the knee. It has a firm hold on the patella because

it fuses with the periosteal covering of the patella when it reaches the edges of the bone. The deep fascia and the quadriceps extensor muscle are inserted into the patella. Prolongations from the fascia and from the quadriceps pass from the edges of the patella and are called the patella ligament. The patella, therefore, is bound up in this strong fibrous tissue and its restoration when fractured is aided by the fibrous tissue in restoring the function of the knee.

Treatment.—Methods of non-surgical treatment are defective. They do not hold the several tissues in apposition. It is most difficult to overcome the contraction of the quadriceps so that separation of the fragments can be prevented. Proper coaptation is prevented by a thick fibrinous tissue covering the ends of the broken bone. But in nearly every instance when the lateral portion of the aponeurosis has not been seriously injured, a good functional result should be obtained by any of the simple or more ingenious non-operative methods of treatment in vogue. When the lateral aponeurosis and contiguous tissues are severely torn, in addition to fracture of the patella, it is not probable that any method of non-operative treatment will secure a good result.

Operation can be done when all signs of cutaneous lacerations are gone. When the skin is smooth and can be made surgically clean, when operation can be performed under conditions that assure asepsis, there are but few cases of fractured patella which should not derive full benefits from surgery. It is only through an open incision that it is possible to discover with any degree of accuracy the extent of injury to bone and soft tissues and accurate coaptation of bone and repair to aponeurosis can be made.

Operation.—A v-shaped flap, which turns down, is most easily managed. It exposes

*Read before the Middle Tennessee Medical Association, Springfield, Tenn., May 18, 19, 1926.

the fracture and injured tissues perfectly. All fluid and blood clots should be removed by gauze sponges and the ends of the bone freshened by means of a curet. Sponging and handling of tissues should be done with instruments, avoiding contact of the gloved hand with the injured tissues, in order to safeguard the sensitive knee joint from a disastrous infection. There is a ragged fibro-periosteal fringe which hangs over the margins of the bone fragments and prevents approximation, which should be carefully lifted. The fragments should be perfectly coapted. Mattress sutures of No. 2 chromaticized catgut should be placed in lateral and medial aponeurosis and these reinforced by a running suture along the

margins of the fibro-periosteal tear. The skin is closed by a subcuticular catgut suture, and the knee then encased in a plaster cast, to immobilize the knee joint for a period of three weeks. A removable cast is then applied, which allows the patient to begin active motion at intervals. The patient is allowed to walk two weeks after operation with a cane, crutches being considered unnecessary. Application of heat, gentle massage, careful active motion are conducive to restoring the knee to normal function. With this treatment a good functional result may be confidently expected, as the knee is practically restored to normal.

THE JOURNAL

OF THE

TENNESSEE STATE MEDICAL ASSOCIATION

Devoted to the Interests of the Medical Profession of Tennessee

Office of Publication, 420 Jackson Bldg., Nashville, Tenn.

J. F. GALLAGHER, M.D. -----Editor

AUGUST, 1926

EDITORIAL

THE STATE BOARD OF HEALTH AND THE TENNESSEE STATE MEDICAL ASSOCIATION

The reason for the existence of an organization of physicians, either municipal, county, state or national, is to aid their members in their manifold duties, among which the outstanding are to relieve human suffering and the prevention of disease. It cannot be denied that no other profession so freely sacrifices its own interests for those of the masses, yet it is to be regretted that some of our short-sighted doctors; yes, even members of this organization, not only refuse to co-operate with the State Board of Health, but are openly antagonistic to it.

It is a source of pride to our state and to our profession particularly to be able to point to our present Department of Health and to recount the valuable life-saving work which they are doing.

The value of the State Society to the public should be through its active support of such an agency for the awakening of popular interest and the dissemination of needed instruction upon the subjects of public hygiene and sanitation, and the great duties of citizenship in connection with these problems. The people are not apathetic; their interests can be easily awakened, as was recently demonstrated by the campaign conducted by the State Chambers of Commerce for increased appropriation for the Department of Health. In this public function the State Medical Association should find one of its richest fields of usefulness, and he whose deepest soul does not echo this sentiment is an unworthy member of the profession.

P. B.

NEWS NOTES AND COMMENT

Dr. T. B. Gassaway has moved from Covington to Halls, where he will continue the practice of medicine.

The many friends of Dr. Jere Crook, of Jackson, will be pleased to learn that he will return home in the late fall. Dr. Crook has been in Littleton, Colorado, in an effort to regain his health.

The five best ways to waste your time: Go to the movies; listen in over the radio; play bridge; play chess; play checkers.

If you have legislation that you are interested in or legislation that may affect the profession, see your Representative or Senator now and talk it over with them. The platitudes of our eulogists have little weight with our legislators, especially when the cults maintain a powerful lobby at the capitol.

WE NOMINATE FOR THE HALL OF FAME:

Dr. E. C. Ellett: Because he is an ex-president of our State Association; because he has held many positions of honor in national organizations of his specialty; because he entered the World War as a First Lieutenant and was discharged as a Lieutenant-Colonel; because he has always taken an active interest in organized medicine; but principally because he is a good fellow and a gentleman in the full meaning of the words.

Dr. O. J. Porter: Because he is a business man as well as an up-to-date practitioner, having promoted an independent telephone company in his native county of Maury, the "Dimple of the Universe"; because he has made important discoveries in his archaeological explorations; because he has made several trips to Hayti to study the negro in his purest form, and because he is the only man in the world who operates a "bug farm."

Dr. Duncan Eve, Sr.: Because he is the

Nestor of Surgery of the state; because he has made valuable contributions to surgery by his writings in magazines and text books on his chosen specialty; because he is an authority on general surgery, especially that of fractures, and because he is a Chesterfield of the old school.

Dr. Willis C. Campbell: Because he is among the outstanding orthopedists of the country; because he always takes an active interest in the proceedings of the State Association; because he has made valuable contributions to joint surgery, and because he has established one of the largest special clinics in the South.

Dr. Samuel T. Hardison: Because at the age of eighty-five he is still actively engaged in the practice of medicine in Lewisburg and Marshall County; because he has been engaged in the practice of med-

icine for almost fifty years; because he is a fluent talker and an adept in repartee; because he is a constant attendant upon medical meetings, but principally because he is a highly cultured Christian gentleman.

MEDICAL SOCIETIES

The fall meeting of the East Tennessee Medical Association will be held at Maryville on October 14, 15. Dr. Jesse C. Hill, of Knoxville, Secretary of the Association, has announced an attractive program of twenty papers, together with three papers which are made a special order. Among the invited guests is Dr. Guy L. Hunner, of Baltimore.

MISCELLANEOUS

Dr. J. F. Gallagher, Editor,
Tennessee State Medical Journal,
Nashville, Tenn.

Dear Doctor: Please find enclosed a short message from Hardin County, the greatest (area?) and best county in the state.

Divers and sundry observations made by the undersigned over a period of years have conspired to integrate an inexpressible disgust of certain specific and growing practices, obtaining in this vicinity, in the writer's mind. These practices have been touched upon with a degree of levity, in my short paper, which will, perhaps, be pardoned by you and the readers of the Journal when the old adage of "Many a truth is spoken in jest," is recalled.

Very sincerely yours,

O. H. WILLIAMS, M.D.

Savannah, Tenn.

IT IS EASY TO SHOOT

This short lambeste is not intended to incite any one to take up arms and shoot a doctor with sling shots, pistols or cannon, but rather has to do with the doctor as a shooter himself.

I read an article a day or two ago in the Tennessee Medical Association Journal by Dr. Krauss, of Memphis, pathologist and bacteriologist, of whom the state of Tennessee is so justly proud. "Relapses on Malaria," by Dr. Krauss, in the June issue of our Journal, is an excellent article and, I am sure, was appreciated by all who read it. The thing that tickled my funny bone was the discussion entered into on this article by Dr. Sanford, of Ripley, Tenn., and Dr. Spingarn, of the good city of Memphis.

I do not know either one of the above gentlemen who entered into this discussion, but I do know this, that they certainly said a "earfull." You will find this discussion on page forty-six of the Journal for June, 1926.

The shooter of this shot is a country town doctor, and he is proud of it. He has been several times to the State Medical Association meetings, paid his "bob," and has been fed at the country clubs in fine style (for a country doctor). He has been to the district medical meetings of the state and has been fed in the same fine style, by so much per. He has been to the Tri-State meetings of the three greatest states in the Union—Tennessee, Arkansas and Mississippi, and has been feted in the same manner at the same rate. The food and entertainment at all and sundry of these various meetings was the best to be had.

"Let's get down to cases," said the devil to the printer. We have the intravenous and intramuscular injections of sodium caccodylate for everything, almost, from a mild anemia to a grave case of syphilis. We have hypodermics for the boy who has been on a jag, and for the boy who wants to get on a jag. I'll be darned if it doesn't remind me of the old song so popular a few years ago, "There are smiles that make us happy, there are smiles that make us blue," etc. In the same way of saying, "There are shots that make them happy, and there are shots that make them red, white and blue," and sometimes, as Dr. Spingarn says, the "blueness" means that it is the blueness of death.

I have heard all sorts of "shots" recommended at the various meetings, as cited above. Not having a gift of speech and no nerve at all, I sat, dumbfounded by the reader's nerve and ignorance, knowing at the time that the gentleman on the floor knew nothing of his subject, and even less than nothing.

Here is what I have been trying to come to: Good doctors of the good state of Tennessee, before we "shoot," let us know what we are shooting for. A hunter loses lots of ammunition by shooting at a squirrel hidden in the leaves of a hickory nut tree. (And he doesn't get the squirrel.) A doctor, whether "coun-

try raised or city bred," too often misses the disease when he shoots at a diagnosis promiscuously.

I am not adding a moral to this short article, but I must say, let us all be careful of our diagnosis, and use the state laboratories for diagnostic purposes—whether for blood, urine, sputum, smears, or fecal discharges, and thereby we will get a higher percentage of correct diagnosis, and, as I believe, more real cures to our credit.

CHOLECYSTOGRAPHY: USE OF PHENOLTETRAIODOPHTHALEIN

Everts, A. Graham, Warren H. Cole, Glover H. Copher and Sherwood Moore, St. Louis (Journal A. M. A., June 19, 1926), have now given the sodium salt of phenoltetraidophthalein intravenously to fifty patients. For purposes of intravenous use in cholecystography it seems to possess very decided advantages over anything else hitherto employed. Satisfactory shadows of the gall bladder can be obtained with smaller doses than with the isomeric compound, tetraidophenolphthalein. Its use, therefore, is followed by fewer and much less severe toxic reactions, although within the last year these have been negligible with the tetraidophenolphthalein. The toxicity of this whole group of substances seems to be due chiefly to the phenolphthalein part of the molecule, as judged by the fact that toxic effects can be produced by injections of phenolphthalein alone which are apparently identical with those produced by the halogenated phenolphthaleins. As an average intravenous dose, the authors have used the phenoltetraidophthalein in amounts of 0.04 gm. per kilogram. They have used amounts up to 2.5 gm. for adults. They have not found it necessary to exceed that amount in any case, although it is conceivable that unusually large persons might require larger doses than this. For the sake of convenience, they ordinarily give it in one dose dissolved in thirty c. c. of freshly distilled water. In this way it may be given easily with a syringe. But if larger dilutions are desired it may be given by the gravity method. In the fifty

cases there were three instances of slight dizziness of no more than ten minutes duration. In the other cases there was no reaction of any kind. The fact that it gives satisfactory results in relatively small doses makes it possible also to make the injection all at one time without the same fear of toxic reactions as is the case if the larger dose of tetraidophenolphthalein is given at one time. Likewise the danger of thrombophlebitis is reduced. There have been no instances of this in this series of fifty cases. A final advantage lies in the fact that this substance seems to be more rapidly excreted through the liver, and accordingly the time necessary for a cholecystographic examination can therefore be shortened. Excellent shadows of the gall bladder may usually be obtained in four hours after the injection of the phenoltetraidophthalein. Only indifferent success with this substance has resulted when administered orally. Another substance which gives excellent cholecystograms is the sodium salt of tetraiodisphenolphthalein. Preliminary experiments indicate a marked absence of toxic effects.

TRAINED NURSES

A report published in the Chicago News indicates that the Illinois State Association of Nurses, first district, has put into effect a new policy under which its members are refusing to accept twenty-four hour duty when called on as private nurses by patients in hospitals. The demand means that a person requiring continuous attendance must employ two nurses where formerly he paid only one. For at least five years there has been increasing uneasiness among the medical profession and the public over the changing attitude of the nurse toward her vocation and her labor. What was formerly distinctly an auxiliary in the care of the sick has become split into a dozen professions and specialties, with increasing attention to management and decreasing attention to individual service. There are now nurses engaged in public health work, social service, laboratory technic, mental investigation, dietetics, ro-

entgenology, anesthesia, hospital management, teaching and many other positions. Too few nurses who enter the training school have their thoughts focused on the ideal of personal service to ailing humanity. Rather, it would seem, they are stimulated to the securing of one of the dignified positions that lie within the categories mentioned. Obviously, by this development, the care of the individual sick person has suffered. The possible lack of this care is responsible for the unrest that pervades medical and lay circles in the matter of nursing. At the last annual session of the American Medical Association, the House of Delegates particularly requested the Board of Trustees to look into the nursing situation and to appoint a special committee for the purpose. On previous occasions, other investigative bodies have rendered reports. Granted that there is need for such highly specialized nursing administration as has been mentioned, the needs of the individual sick are primary ones. Apparently, nurses are being trained in technical matters to a point at which dignity suffers when they are asked to undergo the tribulations of personal service. The modification of curriculums should tend to the development of more nurses who will consider the care of the sick their highest ideal.—*Jour. A. M. A.*, June 12, 1926.

AGAIN, PROTEST THE SHEPPARD-TOWNER ACT

The *Journal*, February 6, called attention to bills pending in Congress to authorize operations under the Sheppard-Towner Act for two years beyond the limit originally fixed for the termination of such activities. The House of Delegates had previously condemned the original act. The *Journal*, therefore, appealed to constituent societies and other agencies to support the action of the House by protesting to their Senators and Representatives against the enactment of these bills to extend its life. Such a bill has, however, passed the House of Representatives. In the Senate, the Committee on Education and Labor reported favorably the bill already enacted by the House, but recommended that authority for

prolonging operations under the act be limited to one year. This abbreviation of the proposed prolongation of the life of the act was based on the opinion of the committee that the functions taken over by the federal government under the Sheppard-Towner Act were state functions and should be allowed to revert to the states. The evidence offered by the proponents of the pending legislation to justify its enactment, so far as such evidence is available, is of a most general and uncertain character, and much of it comes from interested witnesses. Certainly it is not such as to convince any person accustomed to weigh evidence concerning such matters that the Sheppard-Towner act has reduced or ever will reduce maternal or infant mortality beyond the reduction that the states themselves might effect. Nor is the evidence such as will convince a careful student of government that the federal government can continue to buy from the states, through subsidies, the right to supervise and control state activities that the federal government under the constitution cannot directly control, without endangering our entire system of government. The proponents of the pending bills frankly admit that the two years' extension they have sought is not sufficient to accomplish the purpose of the act, and that additional extensions for indefinite periods will be required. They are not likely, therefore, to omit any effort to have the Senate reject the recommendation of the committee that the life of the act be prolonged for one year only and enact the bill as passed by the House, providing two years' extension. Those who believe that the Sheppard-Towner Act is essentially pernicious will do well, therefore, to continue their efforts to defeat any legislation looking toward the extension of the act for any period whatever. Action toward that end may accomplish its purpose, and even if it does not, it will tend to support the recommendation of the committee for a one year extension only. Protests, to be effective, should be sent immediately, by telegram or special delivery, as the bill may come up for action at any time.—*Jour. A. M. A.*, May 8, 1926.

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CANCER OF THE SKIN AND MOUTH*

JAMES M. KING, B.S., M.D., Nashville

IN a discussion of this subject before a body of general practitioners of medicine the exciting cause of the malady is not so important as the question of early diagnosis and treatment. The preeminent importance of this statement is more widely advocated and more thoroughly established today than ever before, because the pathology is better known, and we must continue to lay stress upon it until every physician is keen in the diagnosis of cancer. Until the actual cause is discovered we are compelled to follow this teaching just as we did with syphilis, malaria, and other diseases, which were successfully treated for centuries before the causes were revealed. The earliest diagnosis and treatment are the main issues at the present time, and they should be heralded from every housetop, in every hamlet, and throughout the cities of this broad country. The profession can freely warn and instruct the public concerning cancer, a disease innocently acquired and so prone to fatal termination. While cancer may often arise from sources of irritation, such as the pipe stem, burns, wounds, and from other long standing irritated surfaces of the skin and mucous membrane, we cannot point to the actual cause and state why the tumor started from these irritated conditions

rather than from unaffected tissue, and we can only make use of these facts in the way of prevention and in warnings to the public, so the whole cancer situation naturally resolves itself, after due consideration, into the statement that the profession must instruct the public, look to the very earliest diagnosis, and adopt radical treatment in order to have any improvement in the control over the condition. The inherent suspicion of the masses of mankind is one of the supreme deterring elements retarding the success of this great movement; the other element is ignorance; but as enlightenment moulds the mind of the laity, these obstructions will be dispelled. At times the advocate feels the pangs of despair.

A practical presentation of this subject demands an outline of the different varieties of cancer of the skin and a description and diagnosis and treatment of each kind. Sarcoma will not be considered, and dealing only with the epitheliomata they will be divided into two classes: (1) that kind which is only locally malignant and which, though it may spread laterly and penetrate deeply into the surrounding tissue, does not metastasize; (2) those which are generally malignant, metastasizing to all organs and tissues of the body. The locally malignant epitheliomata consist of the so-called rodent ulcers, and the generally malignant include

*Read before the Tennessee State Medical Association, Memphis, May 11, 12, 13, 1926.

the, primary prickle or squamous cell epitheliomata of the skin and mucous membrane, and secondary epithelial tumors which have invaded the skin from deep seated cancer.

RODENT CANCER

This type of cancer was described by Jacob, of Dublin, in 1847, and is often referred to in the literature as "Jacob's Ulcer" and as basal cell cancer. It is truly a malignant epithelial growth which has its beginning in the basal cell layer of the epidermis. It is my desire to describe this tumor in such a way that every one will always recognize it clinically whenever it comes under observation, whether early or late. As a rule we are to expect it to develop on the face, about the cheeks, the eyes, the forehead and temples, although in rare instances it may appear on other parts of the skin. It may occur between the ages of fourteen and seventy, but most often occurs between thirty and fifty. In order to get a clearer conception of this particular type of cancer let us describe the beginning, the development and sequences of its growth. The normal epidermis consists of four fairly well differentiated layers of epithelial cells; namely, the basal or germinating layer, the granular layer, the translucent layer and the horny layer. The cells of the basal layer are the only cells that normally possess the power of reproduction by mitosis, so the other three layers above the basal layer are only transitional layers of daughter cells undergoing the process of keratinization to form the horny layer, which constitutes the real protecting layer of the body. These three transitional layers take or play no part in the cancerous feature in rodent ulcer; they remain daughter cells without the power of reproduction and aid in the formation of the tumor only by their presence as inert cells. Therefore, we must look for the seat of this type of cancer in the basal or germinating layer of the epidermis. So in a group of cells of this layer, something, we know not what, excites an abnormal cellular development which continues slowly until a mass of epithelial cells is formed large enough to be

felt and to be seen. At first it is superficial and, on account of its structure being entirely epithelial and the cells so closely packed and piled together, and the mass being devoid of blood vessels, it presents a very definite feel to the touch and appearance to the eye. It has a harder feel than normal skin and is pearly and translucent in appearance. So in this way there is developed a small elevated epithelial tumor, the size of a split pea or larger, hard, pearly, translucent and smooth, movable with the skin and rather definitely circumscribed. The basal cells continue to reproduce, the mass increases in size and, there being no blood vessels of any note in the tumor, nutrition being supplied largely through the intercellular spaces, it slowly reaches a state in which the center cells of the tumor fail to receive sufficient nutrition to keep them alive, the center cells die, thus producing the first step of ulceration in this type of cancer. Then secondary pyogenic infection takes place, followed by erosion and more and more destruction of the surrounding tissue. The bloody, serous discharge dries and forms a crust, just as in other ulcers, but the characteristic ear marks remain, the border is like the primary tumor, elevated, hard, rolled and translucent. The cellular activity of the tiny lesion slowly continues to spread and to penetrate until ultimately it may destroy the eye, the nose, the entire half of the face, may enter the skull, and finally, through the intercurrent conditions associated with such an affliction, destroy the life of the individual, and yet, with all of this destruction and mutilation, there is no sign of metastasis.

This is the history of the typical rodent ulcer, but a critical discussion would call for a description of three other rare varieties of rodent ulcer; namely, the superficial cicatrizing variety, the card-like, and the cystic, which will be omitted.

DIAGNOSIS

In the early stage there is scarcely any lesion that looks like this epithelial growth. It might be single or more than one, but the feel and the appearance are characteristic and there are no subjec-

tive symptoms. Pain would prompt the desire for treatment. It is a new growth and if the physician will only think of the origin and formation, which naturally can give it only a certain appearance, as stated above, the diagnosis should be of no difficulty. After ulceration develops the clinical diagnosis is not so easy. Lupus vulgaris, superficial ulcerative syphilis, and sometimes blastomycosis must be considered. But bear in mind the hard rolled margin of rodent ulcer, a microscopic section and a Wassermann might be necessary. But a diagnosis must be made in order to direct the course of treatment, which is different from that for squamous cell cancer, and can always be made if one will take time and exercise determination. Never turn the patient aside with the remark, "Let it alone until it bothers you," the bad results of which have been brought to my attention time and again. Right here is where the quack enters the domain of medical practice. When the regular profession fails to recognize and treat or to direct such patients, there is nothing left but the quack. Diagnosis is the key to the situation.

TREATMENT

In the treatment of malignancy the one thought of all is to remove or destroy every cell of malignant tendency and the method that will accomplish that purpose with the least scarring and disfigurement is the one to apply. The knife, the electrocautery, x-ray, radium, and electrocoagulation are the approved present day methods of treatment. The small movable epithelioma on the skin may be excised with the knife, provided the line of excision is made far enough from the tumor and the wound closed, with perfect results. But the successful use of the knife alone is very limited, because as a rule the tumors are too large to rely upon the knife to remove all of the cells. The bad results from the knife is one thing that has prejudiced the public against even any treatment of cancer. The large flat epitheliomata the size of a quarter or a silver dollar, ulcerated or not, should be treated with the x-ray or radium, x-ray preferably on ac-

count of the area. Large, deep seated, nodular, or larger ulcerated tumors, should first be removed with the electrocautery and then the open wound treated with x-ray at intervals, allowing the wound to heal by granulation. The adjacent glands are not to be considered unless it is found that a squamous cell epithelioma has engrafted itself upon a basal cell. No hard and fast rules of detail for treatment can be laid down, because it is found from experience that every case will demand some modification in the scheme of treatment. The one necessary requirement in the successful handling of cancer is experience, for if one meddles and does not destroy, the cells are excited and conditions are aggravated. Electrocoagulation has a limited use, the other methods named meeting almost every demand. If the cartilage of the ear or of the nose is invaded, it should be excised, since it does not respond to radiation.

Recurrences will appear if treatment is not thorough. Lesions should be kept under observation for several months or years. Experience will often lead one to apply more x-ray than appears to be necessary in order to kill any lingering cells deep seated in the epidermis. Time is the criterion of cure, and large lesions are more liable to recurrences than small, therefore they should be observed over a longer period after treatment.

Allow me to lay greater stress upon the value of the electrocautery in the removal of malignant tumors when the wound is to be left open and treated with x-ray. Under local anesthesia it enables one to do practically a bloodless operation. The tissue to be severed is in a clean, bloodless field. The ear at the base and lesions, two to four inches across, may be removed without a ligation.

PRICKLE OR SQUAMOUS CELL EPITHELIOMA.

This is the type of epithelioma that so readily produces the dreaded metastases and it may develop as follows: (1) primarily from apparently normal skin or mucous membrane, but it most often starts in a benign warty growth or in a long continued irritated surface of the skin or mucous

membrane; and (2) secondarily, by metastasis from a deep seated cancer of the breast or stomach.

The clinical picture presented by the squamous cell cancer is different from that described for rodent ulcer. In normal epidermis, or mucous membrane, the stratum germinativum is the only layer of cells that has the power of reproduction, and in rodent ulcer it is this particular layer that manifests the malignant feature by its wild and unruly production of cells that make up the tumor, but in the squamous cell cancer there is such extensive excitement and virulence produced by the unknown existing cause that even the prickle cell layer itself, in addition to the basal layer, becomes possessed of the capacity of ungoverned reproduction-malignancy, and the tumor may be filled throughout with mitotic figures, and by reason of this fact, multiplication of cells of both layers, the tumor grows more rapidly, penetrates the corium more easily than rodent ulcer, and thus develops a different clinical appearance.

Then, at first, the tumor on the skin is a small, hard brownish-red elevation, which usually becomes covered with an adherent, rough, horny scale, not slick and smooth, and bleeds easily when the scale is removed. Now is the time to strike it a death blow, if only the patient would present itself. Its rapid growth will enable it to reach the size of a dime within a few months, while years might be required for rodent ulcer to reach the same size. For some time it remains intact, solid, hard, elevated with regular or irregular abrupt edges beneath which the epithelial growth spreads out in tiny finger like projections into the apparently normal skin, or mucous membrane, but later the center, cut off from nutrition, dies, producing the first ulceration with a raw red center and the sequent exudation, which dries into a bloody crust. On the lip and penis the same condition exists, but in the mouth the ulcer remains open. However, on the muco-cutaneous junctions of the lip, anus and vulva this type of cancer may assume the vegetating, cauliflower-like growth. Malignant lesions of the lower lip, tongue, gums, floor of the

mouth, buccal mucous membrane, back of the hand, penis, and vulva are usually squamous cell.

The growth and ulceration progress, the adjacent lymph glands become enlarged and indurated with metastasis and new malignant foci may appear in the adjacent skin or in distant parts and the inevitable fatal issue slowly or rapidly ensues.

Precancerous lesions, if the term may be allowed, should be mentioned in this presentation. It is a well established fact that squamous cell cancer most often arises from some previous disturbance of the epithelium. Then why not designate these precancerous conditions? Some pathologists shy at this notion, but why strain the point? It is evidently a fact rodent ulcer usually begins in apparently healthy epithelium and while squamous cell cancer may do the same, yet it most often begins on an area that has been subjected to some form of trauma or that has undergone some form of degeneration developing the precancerous lesions; as (1) hard warty growths on the face; (2) from keratoses on the face and hands; (3) seborrheic warts on the face; (4) scars from burns; (5) long standing cutaneous diseases, as lupus vulgaris, etc.; (6) leucoplakia of the mouth; (7) irritation from impacted molars and sharp teeth; (8) irritation from the pipe stem and cigar on the lip; (9) continued irritation from chemical agents, actinic and x-rays.

DIAGNOSIS

In this type of cancer a clinical diagnosis is often difficult to reach. It is always a hard, circumscribed tumor, and does not present the clinical appearance of rodent ulcer. The age of the patient must be considered. On the lip it is red, hard, usually elevated, crusted, bleeding easily, with or without palpable glands, often associated with smoking. However, chancre and granuloma pyogenicum may have to be differentiated. On the tongue it may be a hard, circumscribed nodular mass, painless, or it may be ulcerated with hard prominent borders. Here a gunna might be considered. It is hard, too, and the bor-

ders are prominent. Tubercular ulcers must be worked out. Their margins are soft and not so elevated and are more irregular. On the gums it is harder than the normal gum tissue, circumscribed and usually ulcerated, and a tooth may be found responsible. But clinical skill is limited and in many cases it is impossible to make a positive clinical diagnosis, but a diagnosis of the type of malignancy must be made either before operation or after in order that the proper course of treatment may be administered. If it becomes necessary to take a section for examination before operation, it should be removed with a hot knife or the cautery should be applied immediately after it is removed with a cold blade in order to prevent metastasis, which are supposed to develop from emboli through the lymph channels.

TREATMENT

The procedure in treatment depends to some extent upon the size and age of the lesion, because, as a rule, at the beginning there is only a local malignancy, even in squamous cell cancer, and if this group of cells is removed or destroyed cure may be expected. However, I have seen small lesions metastasize very early. But if longer time allows palpable metastases to develop the efforts in treatment are more extensive and often in vain and hope turns to despair.

Suspicious moles, keratoses, seborrheic warts and other pre-cancerous conditions should be properly treated in order to prevent malignancy. Melanoma has not been discussed, but a warning should be given with reference to melanotic moles. If anything is done to them they should be excised bodily with a wide margin; never treat them with the electrolytic needle.

First, if the lesion is small and superficial the proper application of radium, or x-ray locally, with additional x-ray therapy to the adjacent gland areas, will give the best results. Metastases must ever be in mind and every step taken to prevent their development. But if the growth is large and, whether the glands are enlarged or not, I still believe it is the best practice to remove the tumor with a wide margin,

either with the electrocautery or knife, whichever is the best in the judgment of the operator with reference to the location of the tumor, with a bloc dissection of the glands and lymph channels, and this followed by full doses of radium or x-ray to the open wound and then repeated deep x-ray therapy to the gland area.

The notion is changing with reference to the procedure just stated above, at the General Memorial Hospital, New York City, where a large quantity of radium is accessible. Many cases that were subjected to surgery a few years ago are now treated by radiation. The primary lesion of the tongue receives radium emanation, the palpable glands are excised under local anesthesia followed by x-ray therapy to the areas.

It remains to be seen what advantage this procedure with radiation and excision of palpable glands has over careful surgery combined with radiation. Only time and experience will reveal the superior method.

There is one fact that should not be overlooked or disregarded in treatment and that is that every malignancy is a law unto itself. None progress exactly alike. All that lies within one's power should be done for every case that presents the slightest chance of relief. Cases of this kind could be cited. Even the apparently absolutely hopeless may be benefited with x-ray therapy.

After all is said and done, the greatest progress that can be accomplished with reference to cancer is to carry on and continue to carry on the propaganda, urging and teaching the public to come for early examination of any small suspicious tumor or sore that does not heal readily. This offers the brightest outlook. In localities where the public has been taught to the best advantage, cancers of the skin, mouth and breast, those that may be seen and felt—are not reaching the enormous size now, before the patient comes for examination, that they did a few years ago. The question should be preached at all times, from the rostrum, from the pulpit, at large and

small public gatherings, in order to induce the afflicted to present themselves early. The same might be said with reference to tuberculosis and some other diseases, but of all diseases, cancer must be treated early if good results are contemplated.

DISCUSSION

DR. J. HOWARD KING, Nashville: Such essays as Dr. King has just presented to a body of physicians like this I think as a rule are of great value.

It seems to me that in our observation of patients in the last ten years that I can already see that patients come much earlier for lesions, particularly about the face or hand, than they did even five or ten years ago. They come presenting smaller lesions, less invading lesions. Sometimes they come and tell you the physician did not even send them. They have learned, either through education from their family physician or through the education due to the cancer propaganda, to attach more importance to the small lesion beginning in areas as outlined by the essayist.

I feel, too, that the family physician has learned, when he inspects or examines a small lesion about the face or hands or mouth, that if he is not sure of the nature of it, he doesn't feel obligated to do something for that patient, especially when he may be doing harm, such as advising him to treat it with tincture of iodine, or ichthyol or some other irritant, or to paint lesions in the mouth promiscuously with silver nitrate, without knowing the nature of them. Certainly it seems to me I can see quite a difference in the coming of patients for these things in the last ten years.

In regard to the mouth: There is one point I wish to mention about leukoplakia. Heretofore in the old books we taught that leukoplakia, in the very large percentage of instances, had its etiology in syphilis. Later investigators I feel almost beyond doubt proved that much the smaller percentage of such cases are due to syphilis, but on the other hand they are due to chronic irritation.

Bloodgood has probably done the best work along this line. He feels that he has definitely proven that tobacco in some form is more often the cause of leukoplakial lesions. That has been especially shown where people hold tobacco or snuff year in and year out in the same location in the mouth. Also careous teeth and ill-fitting dentures. Such things as that act more as a cause than syphilis.

Therefore, you can advise patients, when you see these things early, to interfere with such irritations and very often prevent cancer in the mouth.

I am sorry Dr. King did not discuss cancer in the mouth more. Of course you all know when you have a well-grounded cancer in the mucous membrane of the mouth that it means almost a fatal ending. But I feel that the dentists are becoming educated more to the discovery and importance of the early lesions, and that doctors, if they feel uncertain about the appearance of a very small seison in the mouth should not treat them indiscriminately; that they should attach much importance to them until they know what they are.

As to the use of electro-coagulation, Dr. King, I think, stated that he felt that it was not of very great importance or not of as much importance as some other methods. I feel that, together with radiation, that is, deep radiation of the glands of the neck in connection with the imbedded radiation of the lesion, electro-coagulation of lesions inside of the mouth is very, very important. I feel that these three agents together very often cure a case that could not be cured by either one alone or with surgery, or with any one left off.

DR. EMMETT R. HALL, Memphis: Any article dealing with cancer is of interest to everyone practicing medicine, because every practitioner has to deal with cancer in some way. Dr. King has taken up one particular cancer and that is skin cancer. He has outlined diagnosis and treatment in such a way that it should be of great value to any one doing a general practice.

Within the past few years so many of the papers on cancer have dealt mostly with diagnosis and treatment. I should like to see more papers on "Prevention." According to Dr. Bloodgood, in his recent article before the Southern Medical meeting at Dallas, epitheliomas are unnecessary. He said they are due to ignorance, dirt and neglect. The above statement, I believe, will apply to both patient and doctor. To the patient because of neglect or consulting some cancer quack, and to the doctor because, as Dr. King mentioned so many times, they prescribe an irritating drug that converts what was at first a simple condition into an epithelioma.

I was glad the essayist made the point very clear between the two types of epitheliomas, namely the rodent ulcer or basal cell type and the second type, the one that is most malignant, the squamous cell type. Differential diagnosis is not always easy, and a microscopical diagnosis should be made in cases where there is doubt.

Treatment is very different, because the former has very little tendency to metastasis and the squamous cell type has a tendency eventually toward metastasis, especially with the regional lymphatics.

In using the differential methods of treatment mentioned the most essential thing is thoroughness and a period of observation varying anywhere from six months to two years. During this

period of observation you will often discover a small epithelial lesion that is very amenable to treatment, while if neglected may become a serious problem.

DR. E. R. CAMPBELL, Chattanooga: What Dr. King said about the relation of dirt and filth to cancer is certainly true. If our people were more prosperous I think we would have less cancer. We know that the vast majority of the cancer patients come from the lower walks of life and are unable to pay their bills.

The degree of malignancy of the carcinoma is important in the prognosis. The work of Broders, of the Mayo Clinic, in grading carcinomas will go down as one of the outstanding advances in medicine of this decade.

We should differentiate between the basal cell and squamous cell carcinoma. However, it is often impossible to do this without the aid of the microscope. We find by careful examination of several specimens that the diagnosis of squamous all carcinoma will be made when we thought at first that a basal cell carcinoma was present.

We should never miss an occasion to stress the importance of an early diagnosis. Education of the public should be carried on with more enthusiasm. It is so important to get the case before there is involvement of the glands, bone or cartilage. There is rather early metastasis in squamous cell carcinoma. It is very necessary to know lymphatic anatomy as radium should be applied to the glands that receive the lymphatics from the area involved. Radium should be applied whether the glands are palpable or not. The article of Morton in Archives of Surgery a few months ago on "Carcinomas of the Skin," is a classic.

The intelligent use of the electric cautery is a great aid in the treatment of cancer. We all know of the work of Scott, of Temple, Texas. He has taught us how to really use the electric cautery. A white heat is used when you want to cut a fine line. In this way as extensive an operation as amputation of the breast can be performed without the use of the knife and with less hemorrhage. In this way there is less likelihood of spreading the cancer cells. We have used this method very satisfactorily in several cases at the Newell Clinic.

In burning out an exuberant carcinoma, as of the cervix, a dull red heat is used.

Areas of leukoplakia should be removed with the electric cautery, as many become malignant.

We should be very careful in dealing with the melanoma. All black moles should be removed with electric cautery knife, as metastasis takes place so easily.

DR. S. S. MARCHBANKS, Chattanooga: If we only knew the cause we would know how to treat it. There is no question about that. It is doubtful in my mind if when we do find the cause that radiation will be dispensed with, because we get such beautiful results in most cases by the use of radiation. It is my opinion it will always be used in addition to whatever may be discovered as a treatment when the cause is found.

There is very little to be said when the two Kings get through talking about cancer.

It seems to me in a general way that the basal cell type, not being prone to recur, is easily treated, and it is usually not necessary to treat the glandular area. That is a safe procedure and it seems to me to be the thing to do, depending upon the location and extent of the involvement in the particular case under consideration.

In the squamous cell type, of course, the glandular area must be treated, and, being more prone to recur, must be treated much more thoroughly.

The thing that worries me the most of all is what to do with cancer of the mouth, as Howard King mentioned. It seems to me that the most rational procedure is radiation with radium, extensive radiation with needles inserted in the involved structures, x-ray on the glands of the neck and electro-coagulation extensively applied into the area of involvement on the tongue or buccal wall or floor of the mouth. If there is any better method known I would like to have it brought out at this time.

DR. JAMES M. KING, Nashville (closing): With reference to the cautery, which I mentioned, I am very glad indeed that the doctor emphasized it in the discussion. The cautery has been used since its use by the Hindoos, the early ages of man. But the instrument has been modified until we have one now that is more easily operated than that of the Hindoos. But the cautery plays a beautiful part in the treatment of cancer or leukoplakia.

When the general practitioner goes to New York and visits the hospitals, he will be impressed with this thing as I am impressed with it. We see a case often, but there you see them in heaps and piles. It seems that we ought to prevent the occurrence of these bad cases.

With reference to coagulation, there are cases, I think, that can be cured by electric coagulation that could not be cured otherwise.

When it comes to cancer of the mouth, the floor of the mouth, it has been our practice to excise, lay radium on the area and then radiate the glands in the area exposed after bloc dissection. We in some cases get good results; in other cases, bad results. Thank you.

THE TREATMENT OF GENERAL PARESIS BY THE INOCULATION OF MALARIA*

C. C. TURNER, M.D., Memphis

ONE of the characteristics of paresis is its tendency to remissions. It is known that so-called cures in some cases have been mistaken for remissions. The literature back for a hundred years has contained reports of cures, so called, of paresis, although Leredde, in 1922, announced that "Paresis is the only form of nervous syphilis that opposes us en bloc." Not a few of the reported cures have occurred following an extended intercurrent febrile illness. This was observed by Dubuisson in 1816. In 1877, E. Meyer attempted to produce suppuration intentionally by rubbing Autenrieth's ointment into the scalp.

Professor Wagner von Jauregg had noted "that certain psychoses were healed through intercurrent infectious diseases." This led him in 1887 to intentionally imitate nature by producing febrile states in paretics. He began to experiment with different agents to seek this result. Pilcz quotes Wagner-Jauregg as having drawn up a scale of efficiency of producing fever with the following:

1. Chemical substances, as sodium nucleinate.
2. Toxalbumins, as tuberculin, staphylococcus.
3. Acute infectious diseases.

Wagner-Jauregg's preference, even at this time (1887), was malaria, for he said he thought it particularly suitable with its periodic febrile stages. He began, however, first with tuberculin to produce fever. Later he combined it with mercury, and in 1909 reported some of his results of this treatment. Later, in 1921, he reported some of these cases of 1909 as still well. He next used Besredka's typhus vaccine

and finally turned back to his proposal of 1887 of trying malaria in the treatment of paresis. So in the summer of 1917 he inoculated nine cases of paresis with malaria from a soldier ill with the tertian type. Of these six showed remissions, and of these three improved, improved so remarkably that they returned to their former occupations apparently well. His second series was in 1919, and since then he has used the inoculation of tertian malaria exclusively in the treatment of paresis. In 1921 he had treated more than 200 cases this way. The literature now contains several reports of cases of paresis treated with malaria, and though most of these cases have been unselected as to the duration of their disease, none of the reports are unfavorable. Wagner-Jauregg states that in every case in which the onset is of recent date that a favorable prognosis may be offered, even a complete remission.

In referring to the effects of malaria upon the spirochete, Delgado, of Lima, Peru, relates an interesting belief among natives of his country. "Uta," a tropical disease of the skin and mucous membranes, which results from Leishmaniasis, is rather prevalent among the poor and less sanitary classes. In Peru there is a locality called "Tembladera," in which malaria is endemic. In certain seasons these people with "Uta" go there in caravans to become infected with malaria, for they have learned that it cures their Uta. Uta is also relieved by salvarsan, as is syphilis.

The treatment of paresis with malaria is empirical. There is no known principle by which it causes improvement in these cases. It has been referred to as a "cleansing fire." Also, as a "system of driving out the devil with Beelzebub." Plant and Steiner suggest a biologic order phenomenon, which influences the production of

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anti-bodies to the spirochete. With this assumption they recommend inoculation of paretics with blood of a patient of recurrent fever, owing to the greater zoologic relationship between the spirochetes *Pallida* and *Obermeier*. Muehlens and Kirshbaum believe that following malarial inoculation the general impoverishment of the blood leads to a reactivation of immunity processes through the blood regeneration. The high degree of temperature produced by malaria is probably the chief factor. Leucocytosis is not a factor, for this is absent in malaria and its production by other means than febrile conditions seem to have no beneficial effects.

Weichbrodt and Jahnel have obtained the death of spirochetes in chancres on rabbits inoculated with syphilis by exposing these animals for half hour intervals for three days to temperatures of 105 degrees to 110 degrees F. In these experiments the animals' temperatures have also been raised above normal. Thus, the former practice of hot spas and boiling out processes with syphilitics were probably not without some efficacy. Mattauschek refers to a startling statistic of 4,134 army officers, who acquired syphilis between 1880 and 1900. Of 195 of these who subsequently developed paresis, not one gave a history of an acute infectious disease after their initial lesions. Of 241 of this group who gave a history of an acute infectious disease after their initial lesion, not one developed general paresis. On the other hand, Kirshbaum reports ten of his series of general paresis who had malaria in the second stage of their disease. In a comment on an article of Gans, G. C. Bolton mentions that he had two patients of paresis who had fever from T. B. C., but that this did not seem to alter the paretic course. He also mentioned that in the East Indies malaria is common in Chinese workmen, but they often develop paresis and tabes. However, he fails to point out whether the malaria occurred before or after the initial lesion.

The treatment consists of inoculating the patient with tertian malaria. He is then allowed to have eight-fifteen malarial par-

oxysms, after which the malaria is treated with quinine in five one-grain doses by mouth, three times daily for three or four days. After this quinine is continued once per day in five-grain doses for ten to fifteen days. Then the patient is put back on antiluetic treatment of varying intensity depending on the amount of result, if any, obtained from malaria treatment. We hope for the future that results of our malaria treatment will disclose that even furtherance of any anti-luetic remedies is unnecessary. This will depend largely on what the serologic results from the malaria treatment will be. The reports thus far on this phase of results from malarial treatment are conflicting. The general experience has been that the clinical and seriological results of this treatment do not run parallel. There may be complete remission without any change in the blood or spinal fluid Wassermann reactions. Diminution in cell count and globulin content in the fluid, however, is noted early. Some authors report cases with weekly positive or even negative Waassermanns months after remissions, so, it may be too soon to report anything positively regarding the serology of these treated cases. At any rate, it is best to assume in spite of any degree of remission in these cases that the syphiletic disease is still present and to push anti-luetic treatment.

The inoculation is accomplished in three ways. By scarification of the skin, as in vaccination for smallpox, and then applying a drop of malarial blood to the scarified area. By subcutaneous injection of 1-2 cc. of malarial blood. By direct transfusion into the vein of 2-4 cc. of malarial infected blood. We found the latter preferable and used it in our cases. The incubation period is also shortened by this manner and is usually not longer than five or six days. Some authors recommend typing the blood and also defibrinating in glucose solution. We do not believe this necessary in using such a small amount. Aside from a slight primary rise in temperature at twelve to twenty-four hours after the inoculation, no other ill effects in our cases

were noted from the inoculation. It is not necessary to get the blood from the donor at the height of the febrile stage. It is important, however, to obtain the blood before any quinine is given. It is also important to get a careful history of any quinine or malarial remedies having been recently taken by the patient. Of course, Wassermann tests of the donor are unnecessary.

The number of chills the patient has should be guided by the amount of temperature the patient has subsequently, his tolerance to high temperature and his general physical condition. Dr. Wm. Krause suggested that within or above a ten per cent infection was a safety zone for our patients. We followed this by a daily examination of each patient's blood. Some patients are more tolerant of fever than others regardless of the general condition. This was borne out by case No. 2, who was profoundly cachectic and emaciated when we inoculated her. Nevertheless, she fairly thrived on seventeen chills.

Inoculated malaria has its peculiarities. It is much less resistant to treatment than acquired malaria. It is prone to spontaneous recovery without any medication. Only two of our seven cases received quinine at the termination of their treatment and one of these was after the second inoculation. As a matter of fact we had difficulty in obtaining the regular number of chills in most of our cases, owing to their too early spontaneous recovery. Dr. Busson, who worked with Wagner-Jauregg, considered the plasmodia of inoculated malaria to contain less pigment than acquired malaria. In spite of this, inoculated malaria increases in virulence with each transmission, the febrile rise of each case being higher than that of the preceding donor.

Inoculated malaria may relapse, the temperature remaining normal for several days and the plasmodia disappearing from the blood, to reappear again after several days, with the onset of a hard chill and a rise of temperature. Wagner-Jauregg used hypodermics of sodium nucleinate solution in an endeavor to bring about reactivity of

the disease in such cases. Others use salvarsan.

The course of inoculated malaria may be irregular. Instead of a typical tertian cycle, the chills and fever may occur daily, or even twice a day. These may then merge into a typical tertian type, which subsequently may then become quotidian.

A great deal of improvement may be noticed in some patients after the second or third chill. Others show no improvement for quite awhile after the treatment has ended. During the febrile stages some patients often exhibit an intensification of their general parietic picture. Not a few have auditory hallucinations, which has been explained by cerebral congestion, more particularly of the temporal lobes.

Above all else in the treatment of paresis with malaria, it is important to institute the treatment early in the disease. Long-standing cases have suffered complete destruction of their cerebral neurones and the damage is irreparable. As seems to be the law in all chronic neurological diseases, the functions last acquired in the development of the human body are the first attacked. In paresis speech disturbances are among the earliest findings. These may be so slight that they cannot be discerned by the examiner, unless he has been intimately acquainted with the patient for a long time. E. W. Scripture has devised an instrument to facilitate the diagnosis of early speech irregularities. Briefly it consists of a recording instrument on a smoked drum. Certain letters (especially P) are recorded on this drum and their wave length compared with the normal. He called this symptom "asaphia."

As to whether or not malaria cures syphilis we do not yet know. Certain it is, however, that there are certain stages in the course of certain types of syphilis which malaria has at least improved, when all other remedies and the most intensive and consistent treatment has failed. We believe that every case of paresis in the early stages should at least be given the benefit of this type of treatment in an en-

deavor to improve him or at least abort the ravages of this terrible disease.

Case 1.—Ernest Pound, white male, forty-three years, chauffeur. Admitted to Memphis General Hospital, March 22, 1925. Patient became obstreperous and unmanageable and was arrested by neighbors, who feared for his wife's safety. While in the police station he developed an acute retention of urine and was sent to the General Hospital. He was catheterized in the receiving ward and seven and one-half pints of urine were obtained. No obstruction to catheter was noted. In the ward he was noisy, mischievous and verbiagerous, discussing any and all topics with those about him. He was also euphoric and jocular. He had a chancre twenty-five years ago. Gonorrhea twenty-six years ago. States he was in an auto accident nine years ago, receiving a fracture of the skull. Has had several auto accidents since. Says he has been gassed by an auto exhaust. Drinks corn whisky and eight to ten Coca-Colas per day.

Examination: Patient is much disturbed and excited. He is somewhat grandiose in his expressions concerning himself and wrote a letter to the Haverty Furniture Company ordering a canopy top swing for the nurses, to be sent C. O. D. He also wrote to the Press, offering the use of his marvelous voice in singing, the proceeds to go to charity. He is egotistic and euphoric and cuts up and demands the attention of the whole ward to his antics. He has a memory defect for past events. Disoriented for time and says this is July. Calculation poor; retention poor, being unable to repeat test sentences. Not much speech disturbances. Pupils small, equal and rigid. Patellars brisk and equal. Plantars, normal flexion. Cremasterics and abdominals, normal. No Rombergism. Blood Wassermann negative. C. S. F., four plus all dilutions. Urine normal. B. P. 120/65. March 23, 1925, three cc. of malarial blood, tertian infection from a case of malaria same ward, intravenously.

On the sixth day after the injection of malarial blood, the patient had a chill followed by temperature of 102½. This was followed on alternate days subsequently by two more paroxysms with about the same amount of temperature; following this the patient had no more chills and the parasites disappeared from his blood. We thought from this that the patient had received quinine from the outside; he was noisy and difficult to control on the ward and was therefore discharged to the West Tennessee Hospital at Bolivar, Tenn. A recent letter from the superintendent of this institution states that this patient shows marked improvement so far as his mental condition is concerned. He attributes this improvement, however, to tryparsamide treatment which he has received since he has been in that institution.

Case 2.—Mrs. Vera Wright, white, female, thirty-two years, widow. Admitted Memphis General Hospital, March 12, 1925. Extreme nervousness and giggly. No coherence in conversation. Speech slurring and monosyllabic. History dates from 1915 with a four plus blood Wassermann from that time. Has had intermittent treatment since without avail. Patient has paraesthesias at times and also gastric pains accompanied alternately by diarrhea and obstipation. At times micturition difficult, at other times too free. Occasional headaches and dizzy spells. Two luetic children. All three have been getting treatment O. P. D. three years. Vag. lesion 1912.

Examination: Well developed, much emaciated female, weight about 100 pounds. Patient at times indifferent and dirty, avoiding and defecating in bed. Generalized adenopathy.

Mentality: Memory somewhat defective. Delusions and hallucinations. Hears God talking to her through window. Last night talked to the Governor. Hears dogs being killed. Calls herself an angel of heaven. Disoriented for place and person. Calls hospital a hotel and speaks of the nurses as angels. Patient profoundly weak and unable to walk or sit up. Romberg and other signs for incoordination could not be elicited. Pupils unequal and fixed. Knee jerks very brisk. Darting pains and paresthesias.

Urinalysis negative, B. P. 112/74. Blood Wassermann four plus.

C. S. F., cell count twenty; globulin plus, Wassermann four plus. After entering hospital she received one dose of salvarsan. March 26, 1925. Then all anti-syph. treatment was discontinued.

March 10, 1925, three cc. of blood from patient No. 1 was injected intrav. Afternoon of second chill of patient No. 1.

April 1, 1925, primary rise temp. 100, no chill.

April 10, 1925, hard chill, temp. 104.2/5, blood heavily infected several stages tertian.

April 12, 1925, 103.

April 13, 1925, 103, fed parasites.

April 14, 1925, 103, fed parasites.

April 15, 1925, 102, fed parasites.

April 15, 1925, no more chills or fever.

April 26, 1925, no more chills or fever.

April 15, 1925, few.

April 20, 1925, same patient.

April 27, 1925, hard chill, temperature 103.

April 22, 1925, very few (more normal) parasites.

April 29, 1925, hard chill, temperature 103.

May 1, 1925, 102.

May 3, 1925, hard chill, temperature 105.1/5.

May 5, 1925 (103.3/5).

May 4, 1925; numerous parasites.

May 6, 1925, 103.2/5.

May 7, 1925, no chill, temperature 100.

May 8, 1925, numerous parasites.

May 9, 1925, chill, 103.2/5.

May 10, 1925, 102.

May 11, 1925, 99, moderate number of parasites.

May 14, 1925, no chill, temperature 101.

January 10, 1926, weight 145.

Spinal fluid Wass. neg. Blood Wass. neg. All symptoms have disappeared. All clinical signs have disappeared except the pupil findings, which are the same. The patient returned to work and one month ago got married and has moved to another city.

Case 3.—Wood Taylor, white, forty-four years, barber. Admitted Memphis General Hospital, May 11, 1925. Patient seems to realize his predicament and complains of nervousness, insomnia, loss of memory and defect in speech. These symptoms began very insidiously one year ago and became gradually worse until patient was forced to stop his work as a barber. His loss of memory dates from a spell which was of epileptic type while walking along the street. Patient had a penile lesion in 1907 and gonorrhea in 1910. Patient had six injections 606 early this year, which he was advised to take for an enlarged prostate, after which he claims he did get relief from the dysuria. Twenty-six pounds loss of weight last six weeks.

Examination: Patient was quiet and affable;

at times he seemed depressed, more especially hypochondriacal. He worried about himself incessantly and asked me many questions from day to day about the progress of his case. He was not a good mixer and seemed seclusive towards the other patients. There was a fine tremor of the fingers and tongue. B. P. 110/70. No Rombergism. Tendon and superficial reflexes O. K. Pupils unequal, left greater than right. They react promptly to light, but immediately rebound.

May 15, 1925, no chill, temperature 101.

May 16, 1925, chill, temperature 104.3/5, only few.

May 17, 1925, temperature 104.1/5.

May 19, 1925, chill, temperature 102.4/5.

May 20, 1925, chill, temperature 100.

May 21, 1925, chill, temperature 103.3/5.

May 22, 1925, no chill, temperature 100.

May 23, 1925, no chill, temperature 100.

May 25, 1925, very few parasites.

May 25, 1925, very few parasites.

May 27, 1925, chill, temperature 99.3/5.

June 5, 1925, discharged.

April 20, 1925. After patient had had five chills and febrile stages, she began to react. The technician, Mrs. Beck, says she noticed her to be more normal today than ever before and that for the first time she flinched when her blood was taken for smears. From this on improvement was marked. Parasites first appeared April 10, 1925. Patient discharged June 15, 1925, to O. P. D. for further treatment.

Blood reported negative January 26, 1926, first negative since 1915.

Patient had a period of depression in September, 1925, during which he committed suicide.

Case 4.—Herbert Buckalew, white, thirty-five years, machinist. Admitted to Memphis General Hospital, April 11, 1925.

C. C., nervousness. (Hist. by brother.) Patient brought to O. P. D. for above complaint. He was completely disoriented as for time and place, and brother said that family was afraid to send him to O. P. D. alone. Would not even trust him alone outside of house, so he accompanied him to clinic and gave the history.

Onset July, 1924. At that time he began to lose weight and became nervous and generally weak. In six months he had lost twenty-four pounds. Began taking shots at O. P. D. two weeks ago and feels some better. (Referred to neurology from dermatology.) He is now unable to write and has a marked speech defect.

Past History: Negative, denies syphilis, says he had malaria in 1912. No headaches.

Examination: General adenopathy. Course tremors of hands, tongue and upper facial musculature. These (face) resemble more of a twitching. Pupils equal of fair diameter, but absolutely fixed. K. J., both sluggish. Pos. Rombergism, also kinetic.

Mentality: Marked deficiency. Patient does not know year president, governor, mayor. Says McKinley president during late war. Calculation very poor. No retention. Speech slurring and explosive. Hangs on labials p.b.m.

No excitement, euphoria, grandiose ideas, garulousness, exhalation or depression. Inert and indifferent.

Blood four plus.

C. S. F. Glob. plus, four plus in all dil.

April 12, 1925, three cc. malarial blood from patient No. 2.

Eight chills and febrile stages.

Blood and spinal fluid show no serological change.

Patient has picked up in weight and improved physically. Only slight improvement in mentality.

Case 5.—L. S. Whitten, white, thirty-two years, male, auto dealer. This case referred by Dr. H. K. Turley, of Memphis, for treatment. The onset six months ago began as a change in disposition, which became more apparent with other symptoms, developing in spite of intensive treatment.

Past History: Negative; venereal history denied.

Examination: Faint generalized tremors. The pupils are large, equal, regular and react very sluggishly to light, with immediate rebound. Both K. J., sharp. Both Achilles, sharp. Abdominals, O. K. Cremasterics, O. K.

Sensation: Subjective paresthesias of feet. Otherwise O. K.

Mental: Depression with some restlessness. Delusioned, emotional at times with crying spells. Memory, decided defect for recent events. Calculation, poor. Retention, poor. Speech, thick and halting. Heart, O. K. Lungs, O. K. B. P., 115/70. Urinalysis, normal. Blood Wassermann, four plus. Spinal fluid, Glob. two plus thirty-six, Wass. four plus.

Admitted to General Hospital, September 19, 1925, for malarial treatment.

September 19, 1925, two cc. of tertian malarial blood (Miss Coulter) intravenously.

September 24, 1925, no chill, temperature, 101. Ten chills and fever. No quinine, and malaria disappeared from blood spontaneously.

January, 1926, patient's blood and spinal negative.

Patient has gained fifteen pounds in weight. He is back at work. At times has periodic attacks of forgetfulness. One petit mal attack two months ago.

Case 6.—Jake Lebowitz, forty-eight, white, male, Jewish, merchant. Patient sent to Wallace Sanitarium for extravagance and pathological lack of judgment in business affairs. His first symptoms appeared fourteen months prior to admission to sanitarium.

Past History: Chancre eighteen years ago.

Examination: Patient is egotistic and grandiose. Says he owns a circuit of forty moving picture theaters. He is loud and verbose. At times he lectures to the other patients about paresis and calls himself Dr. Hamilton. Patient is well developed, stocky type and thickly set.

Gen. phys. negative, pasty skin. Slight Rombergism. Pupils pin point and rigid. K. J. very active. Plantar, normal flexion. Urinalysis, normal. Blood Wassermann, four plus. Spinal fluid, cells thirty, Glob. two plus, Wass. four plus. Patient inoculated from No. 3. Had eleven typical tertian paroxysms. On last day of chill patient had three paroxysms and temperature rose to 107. Ten grains quinine by hypo intrav. Malaria lapsed. Four weeks later patient was inoculated again. He had three light chills with fever, after which malaria disappeared spontaneously. Four months later he was discharged much improved and has remained so. No check of serology. No improvement.

Case 7.—Pat Kallaher, thirty-eight years, white, plumber. Admitted to Wallace Sanitarium. Fractious, perverse and mean. On admission to sanitarium patient was mean, obstinate and indifferent. He was quiet and somewhat depressed,

more or less secluded. Blood four plus, C. S. F. four plus.

Patient was inoculated from case No. 6. He had five chills. He developed (on night of fifth chill) an acute gangrenous appendix and peritonitis and was operated on by Dr. W. T. Braun (Memphis). He recovered from this operation and had no further chills past operative recovery, or subsequently. He is now back at work, apparently entirely well. No serology check as yet.

DISCUSSION

DR. J. A. McINTOSH, Memphis: I am impressed with the experimental work done by a clinical man. The mere fact that he has achieved this result is certainly worthy of the time spent in attempting to relieve these paretics. They need relief if it can be given. The cooperation of the laboratory in the United States Health Service under Dr. Krauss' management was necessary, of course. The examination of the slides, the supply of the donor infected with tertian malaria, were all obtained through this service. But Dr. Turner is to be commended for the application of a new method.

Experimental medicine has a place and a part in the practice of medicine by the general man.

DR. T. B. YANCEY, Kingsport: I want to ask

if the form of malaria, or the stage to which the parasite had developed in his donor, played any important part on the end result.

DR. C. C. TURNER, Memphis (closing): In closing, I want to further what Dr. McIntosh mentioned and to express my appreciation to Dr. Krauss and his co-workers for the real assistance and cooperation they gave me in this work. Without them I could not have carried on the work.

Dr. Krauss had his clinician check each one of these patients daily and sometimes twice a day. As long as the patient did not get as low as a ten per cent infection they were within the safety zone.

To answer Dr. Yancey, we tried all the stages. We began first immediately after the chill, and then we took the interim between the chills. It seemed to make no difference. The only thing that did make a difference was obtaining malaria from a patient who had previously received no quinine.

In the first work done along this line it was recommended to obtain the blood immediately after the chill. Later it was found that didn't make any particular difference. The only thing is to obtain the blood from an untreated case of malaria.

THE SURGICAL SIGNIFICANCE OF JAUNDICE*

R. L. SANDERS, M.D., F.A.C.S., Memphis

THE term "jaundice" indicates the staining of the body tissues by the presence of bile pigments in the circulation. Normally there is a certain amount of bilirubin in the human blood, but none has been found in the blood of the dog. This fact must be kept in mind by any one doing experimental work. Clinically, jaundice is only recognized when the skin or sclera becomes visibly stained. There is an intermittent stage of so-called latent jaundice where the bilirubin is in the blood in a greater concentration than normal and yet not in sufficient amounts to stain the tissues perceptibly. It is in this condition that the tests, such as the Van den Burgh, for the detection of bilirubin are of great value.

With the idea of determining the site of origin of bilirubin, much work has been done in recent years by experimenters. Rich and his co-workers have gone into the subject very exhaustively and have finally concluded that bilirubin is not formed outside of and independent of the liver. None of his animals were observed very long and the time element may have been the reason for the discrepancy between his observations and those of Mann, McNee, Aschoff and others, who state definitely that bile pigment is formed outside of the liver. Mann has repeatedly proven that animals become rapidly icteric after hepatectomy. It is probable that the reticulo-endothelial system forms the bile pigment and it is metabolized in the liver.

For all practical purposes as related to this discussion, jaundice may be considered obstructive, toxic or infectious and hemolytic in types. The most common type is that due to partial or complete obstruction of the common bile duct. Complete obstruction is usually due to tumor formation

at the ampula of vater, at the juncture of the cystic with the common duct, in the head of the pancreas, or to compression from outside the duct, the result of metastasis, syphilis, scars from ulcer, and such like. When such causes are operative there is no remission of the jaundice, but it grows gradually deeper. Blocking of the duct by gall-stones is a very common cause of jaundice. Small stones may pass through the duodenal end of the common duct, but large ones lodge, initiate inflammatory reaction and prevent any bile from passing. Under rest and proper management the inflammation usually subsides, the duct dilates around the stone and the jaundice clears up in due course of time. Such attacks followed by remission are common. Pain, chills, fever and elevation of the leucocyte count usually accompany the jaundice due to stone. It is rare that jaundice develops on account of stones in the gall-bladder when none are found in the common duct.

The degree of jaundice is not an indication of the cause, although it may usually be taken for granted that if progressive and persistent, it is in all likelihood due to a malignant process.

The pancreatic duct and common bile duct empty into the duodenum in common. If the obstructing agent produces sufficient pressure to occlude the pancreatic duct, preventing the digestive fluid from entering the intestine, the undigested fat, fatty acids and soap may produce large bulk stools of a rancid, bad odor and a diarrhoea may supervene; whereas constipation is the rule when the clay stools are present, due to the absence of bile alone.

One of the most common features of jaundice is a more or less severe itching of the skin, but there is no relation between its severity and the degree of icterus. Occasionally one will see a fatal case

*Read before the Tennessee State Medical Association, Memphis, May 11, 12, 13, 1926.

progress without pronounced itching. Its cause is not definitely known, although it is generally attributed to the presence of bile salts in the tissues.

Catarrhal jaundice is a term rather generally and often loosely used to describe a condition which is frequently seen in children and young adults, but rarely observed in people beyond middle life. When a painless, persistent icterus is present in a patient over thirty-five years of age, a malignant process should be considered before the treatment is prolonged so far as to make the operative risk great.

It must be borne in mind that not every disease of the bile passage is associated with jaundice, nor is every case of jaundice to be interpreted as a disease of the bile passage or the result of mechanical obstruction. There is a large group of cases where the ducts are patulous, as manifested by bile and its derivatives in the stools, but where the liver parenchyma is involved and the skin is markedly icteric. Infectious processes, Weil's disease, syphilis of the liver, acute yellow atrophy, jaundice due to drug poisons and cirrhosis of the liver, all fall in this group. Surgery is not only unpromising, but may be very harmful in such conditions by adding a burden to the already overtaxed liver function. A sufficiently large number of cases has not yet been treated by diathermy to prove its value, but it at least may be of help in the future when its action and application are better understood and can be used to more advantage.

A third group is a favorite subject of discussion by many French authors. They term it "disassociated" jaundice. They believe an actual dissassociation of bile salts and pigments takes place and the bile salts, and possibly the pigments, may be sent on into circulation independent of each other. "Complete" jaundice would indicate all the bile derivatives in the blood; "hepatic disassociated" jaundice when only one is found, and "hemolytic" jaundice when bilirubin alone is found and it is manufactured outside of the liver. To the surgeon this group is very interesting, for in it is in-

cluded hemolytic jaundice, Banti's disease, pernicious anaemia and possibly Hanot's cirrhosis, all of which have a distinct surgical significance. In hemolytic jaundice the icterus is due primarily to the increased fragility of the red cells with subsequent disintegration and formation of bile pigment. There is much controversy as to whether this process can take place independent of the bile-forming function of the liver. After the red cells are destroyed by the spleen it is possible that the liver is flooded with the pigment, causing an increase in bile viscosity and stasis which predisposes to gall-stone formation, liver and gall-bladder disease. At the Mayo Clinic sixty per cent of the cases subjected to splenectomy were found to have gall-stones also, showing the definite relation of the conditions.

When obstructive jaundice exists and surgical measures are instituted, the patient should always receive careful pre-operative preparation. Fortunately, such obstructions are rarely emergency conditions and the surgeon can well spend three or four days preparing the patient for the ordeal, and can promise him a much better operative risk. The coagulation time is usually much increased and a great tendency to bleed is noted. In the past, hemorrhage has been the chief immediate cause of death following operation on jaundiced patients. Since improved methods of preparation have been used, the mortality has been much reduced and many patients formerly denied surgical treatment have been successfully operated upon. Blood transfusion is valuable. Probably the most important step in the preparation is the use intravenously of calcium chloride. Five cc. of a ten per cent solution should be used daily for three or four days prior to the operation. The coagulation time will be shortened and the tendency to ooze much reduced. An abundance of fluids, especially glucose solution, should be given right up to within a few hours of the operation.

Acute infection in the bile passage, accompanied by stones of sufficient size and position to produce jaundice, will usually

subside under proper management. As a rule the operation should be deferred until such subsidence takes place. When stones are lodged in any portion of the common duct, the indication is clear for a choledochotomy with removal of the stones and drainage of the duct. In bad risk patients, and where the gall-bladder is not too much contracted and functionless, it should be drained also. Cholecystectomy can be safely done in a large number of cases, but should be used only in a properly selected group of cases. Some surgeons are advising the immediate closure of the common duct after choledochotomy, but this should never be done in the presence of jaundice, stones and infection.

Strictures of the duct may be treated by choledochotomy and thorough divulsion of the stricture. The contraction due to scar tissue may be so dense that resection of that portion of the duct may become necessary. In the April, 1926, issue of the *Surgical Clinics of North America*, Dr. Weeks, of San Francisco, reports a very interesting case of stricture of the right hepatic duct treated by divulsion. The patient was a woman forty-five years of age who had suffered from intermittent attacks of colic and almost constant jaundice for many years. Five or six years ago the gall-bladder had been removed with some relief, but she was never entirely free from jaundice. Bile was coming through in the stools, proving the patency of some duct. At operation Dr. Weeks found the left hepatic duct open and bile drainage unobstructed, while the right duct was strictured and the jaundice was secondary to this obstruction. After this observation he was not surprised to note the absence of clay-colored stools. Some structures of the duct are best treated by anastomosing the end of the common or hepatic duct, as the case may be, to the side of the duodenum. This is usually a very satisfactory treatment. Occasionally excision of the scar with end to end anastomosis is the best method of procedure.

Jaundice due to neoplastic disease, especially cancer of the common duct and

head of the pancreas, can often be quickly relieved by cholecystogastrostomy. In such cases the gall-bladder is always very large and may appear diseased, but should never be removed. It is a useful agent in diverting the bile current into the intestinal tract. Eight of our series belong to this group and were all temporarily relieved by cholecystogastrostomy. One case is alive and well now, more than two years since the operation. It is probably a case of mistaken diagnosis and belongs to that group of pancreatitis producing so much swelling that the common duct was obstructed.

Hemolytic jaundice may be cured by splenectomy, which removes a portion of the reticulo-endothelial system and prevents so much blood destruction. The spleen is often quite large but usually not adherent, and the technical difficulties are not great during its removal. The mortality is not high and the results following splenectomy for hemolytic jaundice are very striking and the cures most satisfactory.

On the whole, jaundiced patients are bad risks and, even after the very best pre-operative treatment has been used, should be handled with extreme care. Excellent surgical judgment is paramount in carrying such patients through major surgical procedures.

DISCUSSION

DR. L. L. SHEDDAN, Knoxville: The question of the surgical aspect of jaundice is one that interests every man who is doing abdominal surgery. Of course the subject is entirely too large to undertake to cover in a discussion of five minutes, so I will only speak of one or two features of the condition.

The pre-operative treatment, or the preparation of the patients, is the most important thing to be taken into consideration at the present time. Like a great many other chronic conditions, we now know that the result of treatment more frequently depends upon the pre-operative treatment of our patient than the operation itself. Operations which in the past have been considered extremely dangerous because the conditions of the patient now are made reasonably safe by a proper preparation of our patient.

When we take these patients with jaundice extending over any considerable time, it behooves

us to give them careful preparation and pre-operative treatment. I don't think anyone, except in emergency, would think of operating upon an acutely jaundiced patient.

Another thing is the treatment of the gall bladder in cases where there is jaundice over any length of time. It has not been my practice to remove the gall bladder in any case where the patient has been jaundiced any length of time. Whether we have stones or whether we have malignancy of the pancreas or common duct, or some other cause for which we cannot account, there is some obstruction present or there would not have been jaundice. You don't know whether there is something taking place in the common duct which is going to obstruct the flow later on. The fact they have had jaundice once makes me leary of removing the gall bladder.

The other class I wish to speak of is that of malignancy. We have cancer at the head of the pancreas with intense jaundice. Some men permit these patients to go on and die because they cannot offer them anything of a permanent nature.

I have had a few of these patients whom I think have been the most grateful of any patients I ever had after doing a cholecystenterostomy. They had the annoying condition of itching and the distressed condition in which these patients get. A simple anastomosis between the fundus of the gall bladder and some portion of the intestinal tract which is most accessible gives them a tremendous amount of relief. One patient lived more than a year perfectly comfortable after cholecystenterostomy.

I do not believe these patients should be left to suffer and no attempt made to give relief. They are entitled to what relief surgery can give them.

Occasionally in such cases as he spoke of where he says his patients were alive two or three years, as he stated, he possibly made a mistake in diagnosis, that is was probably a chronic pancreatitis.

Now, that patient is relieved and would not have been relieved had not some form of drainage been carried out. There is always the possibility of our being mistaken in the case being one of malignancy. And it may be you can give them permanent relief.

DR. W. A. BRYAN, Nashville: We had some years ago the idea that we should always drain the gall bladder, and then we talked it all over this country. Then we said we always remove the gall bladder. Now, some of us say we always wait until the acute attack is over. Another man says, "I always operate during the acute attack."

Every one of our positions are wrong. If we undertake to adhere, in gall bladder surgery, as Dr. Sanders has clearly pointed out, to any one set of rules, we are sure to make mistakes.

Now, this thing of jaundice is a kind of bugaboo. I remember hearing an old family physician

laugh at some of the neighbors who came in and said they had jaundice. "You just have jaundice," he would say, and laughed at them. It was looked on by him as an insignificant symptom.

I grant you it is a symptom very likely to mislead us in our interpretation if we don't go deeply into the study of the case, as those of us know who are in the habit of dealing with jaundice cases in an operative way. I can see why many who deal with it only in a medical way would recognize that jaundice is not only a symptom, but that it is a very serious complication. Every patient who has jaundice, from whatever source, is a sick patient. He is sick twice; sick because of the thing that made the jaundice, and sick because he has the jaundice.

It is capable of doing harm. It does not have to be severe jaundice. It does not have to be complete. He does not have to be as black as an Indian nor as yellow as a Chinaman. A patient constantly getting a little more bile in his blood and repeatedly getting more bile in his blood than belongs there is liable to have troubles which we will have difficulty in recognizing when we make up our minds what the treatment should be, and to what extent treatment should go.

The next point I want to emphasize is that absence of jaundice is not in itself significant any more than the presence of jaundice is in itself significant.

In discussing this question of jaundice, DeQuervain, being a surgeon himself, made a statement I thought that was very appropriate. He said the first thing to do is to decide whether that is a medical or surgical case. In other words, you have no right to condemn this case and say he is surgical just because he has jaundice. On the other hand, Dr. Sanders referred to this in his paper. We have no right to say that this patient has got cholecystitis, nor have we a right to say this patient cannot have a stone in the common duct because he has not jaundice. I grant you they usually do, but it is conceivable it may be otherwise. I have found stones where there was no jaundice recognizable clinically, and where there was no history of jaundice.

Now, the final point I want to make is that whatever we may do with a lot of cases, there are two groups, two types of surgery on which we have got to go slow.

The gall bladder case is not a case to be brought in this morning and operated this afternoon, except in very rare instances where there is perforation or with bladder rupture, or where there is a gangrenous gall bladder.

These patients, if we do our duty by them, require study in the first place. They require preparation in the second place.

We would make a great gain if we could once get into the minds of such patients that this three or four days or week of preparation before the

case is operated on means much, very much, sometimes means cutting the risk in half to that patient. It sometimes reduces the mortality considerably more than half, I am sure, to that particular patient if we could get them to understand that.

DR. J. A. McINTOSH, Memphis: Jaundice exemplifies as well as any condition the value of using clinical laboratory help.

Dr. Sanders mentioned hemolytic jaundice. We have the familiar type and the acquired types. The treatment is surgical removal of the spleen. The osmotic response of the red cells to a hypotonic solution is sufficient to establish the diagnosis.

Then, too, I would mention the fact of the value of a pocket spectroscope to be carried by the physician along with his thermometer and his stethoscope. Much information may be gained by looking through fluids with it. The absorptive bands of many spectra are very definite and oftentimes information is obtained sooner by such examination.

Serum containing egg yellow may cause a jaundice-like condition. You confuse this pigment with bile pigment.

There is another condition known as corrote-mia, resulting from the ingestion of carrots, that looks like jaundice. Both can readily be differentiated by the spectroscope from icterus. Eggs and carrots are universal foods.

DR. HILTON R. CARR, Memphis: It is not my purpose, gentlemen, to discuss the merits or demerits of any particular surgical operation for the relief of jaundice, but I should like to stress the importance and significance of every case of icterus from the standpoint of the internist.

It is sometimes exceedingly difficult to differentiate clinically between the hemolytic and obstructive types. Here the Vanden Bergh test will render invaluable aid. The source, or sources, of bile pigment has not been definitely determined. However, we are reasonably safe in saying that the liver does not play a dominant role in the genesis of bilirubin. Recent experiments tend to show that the liver epithelium functions largely in the capacity of excretion of bile pigment; that bilirubin is derived from hemoglobin by a process of transformation on the part of the spleen and bone marrow. This probably explains how splenectomy cures hemolytic jaundice.

As to surgical intervention in obstructive jaundice due to malignancy, I am inclined to regard many of these operations as instances of "Love's labor lost," for the reason that such procedures instead of retarding usually hasten metastasis, thereby shortening the patient's life.

Every case of jaundice should be thoroughly investigated medically prior to operation. Exami-

nations made cursorily frequently lead to disaster.

Promiscuous and indiscriminate removal of gall bladders has never appealed to me very forcibly. Surgery is being used frequently nowadays for its psychic effect.

I do not want to be misunderstood as accusing any one of doing this, but simply wants to call attention to the fact that many gall bladders are not only removed, but drained unnecessarily.

Patients with urgent symptoms, such as we see in cases of impaction of stone in the ductus communis choledochus, pancreatic duct, or ampulla of Vater, usually require heroic measures.

I should like to stress one point in particular and that is preoperative care, which I think is a very important thing to consider. The kidney function should be investigated; the coagulation time should be determined, and the degree of acidosis, if any, should be ascertained.

DR. SANDERS (closing): I would like to emphasize a few of the points discussed. Dr. Sheddan's idea of giving these otherwise hopeless patients a chance to live longer and in more comfort is certainly to the point. I am not sure that Dr. Carr thoroughly understood my meaning in dealing with the subject of jaundice due to malignancy of the ampula and pancreas.

The itching alone, due to persistent jaundice, justifies surgical intervention. When the obstruction is due to a malignant process, the jaundice deepens and the uncomfortable itching progresses until the skin is scratched to the point where bleeding and infection occur.

Chronic pancreatitis will act in a similar manner and occasionally will persist so long that it may be mistaken for a malignant process. I brought this out clearly in the paper. The short circuit operation of anastomosing the gall-bladder to some part of the gastro-intestinal tract may be safely done in the majority of such cases. Erdman reported twenty-two operations, eleven of which were done by uniting the gall-bladder to the colon. These cases lived longer than the ones where the stomach or duodenum was used. I am afraid of infection and do not use the colon to make the anastomosis.

It is surprising how quickly the jaundice clears after the short circuit operation. The gall bladder should not be removed, nor should it be drained to the surface under such conditions. There is often a great temptation to remove or drain it.

I would like to further emphasize the value of splenectomy in hemolytic jaundice. Dr. McIntosh hit the nail on the head in his remarks.

The last point is a plea for the more general use of the Vanden Bergh test. The test bids fair to be of much benefit in differentiating between certain types of jaundice and in determining the presence of the so-called latent jaundice.

COMPARISON OF THE WASSERMANN TEST WITH THE KAHN TEST IN 17,000 SERUMS*

WM. LITTERER, A.M., Ph.C., M.D., Nashville

THREE years ago the author read a paper before this Association on the comparison of the Wassermann test with the Kahn flocculation test in 1,000 cases. His concluding remarks were, first, that agreement with the Wassermann reaction was surprisingly accurate considering its simplicity, economy of materials and time. Second, the test or its modification may be used to advantage in checking up the Wassermann reaction, especially in doubtful cases. Third, the author doesn't feel that the test should supplant the Wassermann reaction, but is of the opinion that the two should be run conjointly to insure more accurate reports. Fourth, it certainly deserves serious consideration on the part of serologists.

The above conclusions are quite conservative in complimentary terms as compared with the writer's present conception of the Kahn test in 17,000 serums. The test at present has been modified—a standardized antigen used and a check (presumptive procedure) on the weakly positives and doubtful reactions employed, renders such a test practically indispensable in any laboratory where the serum diagnosis of syphilis is conducted.

I am still of the opinion that the Wassermann, or its modification, and the Kahn tests should be run conjointly, since each test will "pick up" a certain per cent of positives that one or the other will not reveal.

If only one test were limited to the serum diagnosis of syphilis the author would prefer the Kahn test and its elaborations in the refinement of technique (presumptive procedure) in preference to the Wassermann test or any of its various modifica-

tions, even not excepting the Kolmer, which is regarded as the "last word" on the Wassermann test.

COMPARISON OF 17,000 SERUMS WITH THE KAHN AND WASSERMANN TESTS

In this series of 17,000 consecutive serums, compared with the Kahn and Wassermann reaction, exceedingly close tabulations resulted. There were only 748 discrepancies, which give a per cent of comparative agreement of 95.6 per cent. No account was recorded in slight disagreements, for instance where a Kahn would show a three plus and a Wasserman a two plus, but in instances in which a Kahn showed a distinctly negative and the Wasserman registered a clear cut two or three or four plus with two cholesterinized antigens, then a disagreement was recorded. The Wassermann tests were performed with a sheep cell system and guinea pig complement. Two units each of complement and amboceptor were employed. Four antigens, three cholesterinized and one acetone-insoluble. The Kolmer test was employed in 8,000 serums as an additional check. These two Wassermann tests against the Kahn test served to increase the discrepancy in the final results.

CHART				
Comparison of seventeen thousand Wassermann and Kahn Reactions				
No. of Serums	Wass.	Kahn	Pctg.	
5,491	Positive	Positive	32.3%	Positive agreement
10,761	Negative	Negative	63.3%	Negative agreement
			95.6%	Total agreement
459	Negative	Positive	2.7%	Pos. Kahn & Neg. Wass.
289	Positive	Negative	1.7%	Pos. Wass. & Neg. Kahn
17,000	Total number serums examined		100 %	

In the accompanying table are the results of parallel tests of two different Wassermann tests and the Kahn test on 17,000 serums. Relative complete agreement in 16,252 serums, giving 95.6 per cent of total agreement. The Wassermann was positive and the Kahn negative in 289 serums, giv-

*Read before the Tennessee State Medical Association, Memphis, May 11, 12, 13, 1926.

ing 1.7 per cent favoring the complement fixation test. On the other hand, the Wassermann was negative and the Kahn positive in 459 serums giving 2.7 per cent favoring the Kahn test. In the 289 instances in which the Wassermann was positive and the Kahn negative, there were 202 cases that gave a definite clinical history of syphilis. Ten gave a suspicious history and in sixteen no history of syphilis could be ascertained. The remaining sixty-one cases no data available. In the 459 instances in which the Kahn was positive and the Wassermann was negative there were 357 cases that gave a definite clinical history of syphilis. In fact, 264 were treatment cases that had previously showed a positive four plus complement fixation test. Out of the 459 cases there were twenty-one that presented a luetic history. There were eleven in which no history of syphilis could be ascertained. The remaining seventy cases no data was available.

READING AND RECORDING RESULTS

In recording the comparison of the complement fixation tests with the Kahn test, the results were read and recorded independently by two workers. When an extra worker was not available the results were re-read by the worker about ten minutes after the first reading. We employ the Kahn "presumptive procedure" test routinely. It is of considerable value in weakly positives or doubtful reactions. We regard it as an additional check on the standard method.

CONTAMINATED AND ANTI-COMPLEMENTARY SERUMS

The majority of our bloods were received through the mails sent in to the Central Laboratory of the Tennessee State Department of Public Health, sometimes taking two or three days before reaching the laboratory. Many of these bloods were received in apparently contaminated condition or had undergone partial hemolysis—not infrequently serums were anti-complementary to the complement fixation test while the Kahn test in most instances was influenced neither by contamination nor by anti-complementary properties as shown by the accompanying figures. Out of 17,000

serums there were 524 that were anti-complementary to the complement—fixation test giving three per cent of anti-complementary serums. On the other hand, out of 17,000 serums there were eighty-seven serums that were not available to the Kahn test, giving .5 per cent of serums.

SOURCE OF BLOOD SPECIMENS

The majority of the serums were obtained from bloods sent in from various parts of the State to the Division of Laboratories of the Tennessee State Department of Public Health. Quite a number were received from the Nashville General Hospital, also the Vanderbilt Hospital and the Vanderbilt V. D. Clinic.

I wish to acknowledge my gratefulness to my two assistants, Mr. J. E. Keefe, Jr., and Mr. Lawrence Evins, who have rendered invaluable aid in this work.

CONCLUSIONS

1. In 17,000 serums there was an agreement of 95.6 per cent between two different Wassermann tests and the Kahn test.

2. The chief divergence between the two tests lies in the treatment cases. Undoubtedly the Kahn test is more sensitive in these cases. It should, therefore, be quite valuable in "checking up" treatment cases.

3. A procedure of considerable value in the Kahn test (which we use routinely) is the employment of an additional check (presumptive procedure), especially in serums presenting weakly positives or doubtful readings.

4. The Kahn test is practically indispensable in state laboratories, where many blood specimens reaching the laboratory through the mails in apparently contaminated condition or in a partially hemolytic state, show not infrequently anti-complementary reactions in the Wassermann test give specific reactions in the Kahn test.

5. Its simplicity, sensitivity, specificity and rapidity of execution demand its employment in every seriological laboratory. However, we are of the opinion that the Wassermann test or some of its various modifications and the Kahn test should be conjointly performed, as they shed a use-

ful complementary light upon each other. Each test will "pick up" a certain per cent of positives that one or the other will not reveal.

DISCUSSION

DR. WILLIAM KRAUSS, Memphis: I am very glad indeed that Dr. Litterer brought up this subject of the Kahn test.

I think this technique is one of the most epoch-making laboratory procedures that has been presented in more than ten years. In Detroit I had a two-hour discussion with Dr. Kahn about the deficiencies of his test. At that time it was not as well perfected as it is at the present time. Mr. Dutton, then of the Baptist Hospital, was running Kahn checks on our clinic Wassermanns from the University of Tennessee. Since that time, however, the test has been very much perfected, and the Kentucky State Laboratory at Lexington was the first one to throw the Wassermann overboard. That was followed by Michigan and three or four other state laboratories. The Southern States Laboratories Association has not as yet officially recognized it.

The Kahn test has a very high degree of diagnostic value. The precipitative reactions as substituted for the Wassermann reactions have been, as Dr. Litterer stated, attempted in various countries, by various people, in order to eliminate the very expensive, troublesome and tricky technique presented in the Wassermann reaction. In the overnight incubation a change occurs in the reagents and the test as already set up cannot be changed, and it may happen in a certain run we find it set a little too high. In another run set a little too low. In the one case we get excess positives and in the other case we miss positives. "You gave me a four plus, and I sent it to another doctor, and he gave me a negative. I put another name on the tube and send it to you, and you report it negative."

We run them by number. We don't know whether it is Tom's, Dick's or Harry's. But the limitations of serological tests must be borne in mind. That is why an ideal serological diagnosis should include both of these tests so that when one falls down the other one will pick it up. That is the important thing about this reaction. In Germany, Meinike has three different tests. One is microscopic, the other flocculent, and the other a turbidity test.

Dreyer, in England, has a special test. The woods are full of them. None of them will listen to the other fellow's flocculation test. In this country we also have the ring test, which is not

so satisfactory, because it is not delicate enough.

The Kahn reaction is certainly worth while. It is convenient for an out-of-town patient in these clinics where a patient comes in early in the morning and you have to do this, that and the other, and send the patient home in the evening pretty well checked up, whereas with the Wassermann you have to have an overnight examination, and there is delay.

The test can be run singly as well as in groups. You can put it in a test tube and fifteen minutes afterwards make a report, if not too busy doing something else. Of course each group of procedures has to take its turn.

There are three things doctors think they have to do to serum. One is to take it improperly, the other is to put it in an impossible container; and the other is to ruin it if possible before it comes into the laboratory.

Bood should be taken by somebody that has some regard for what the serological reaction is, with a clean, dry syringe. And don't send it in in a Listerine bottle with the label still on it. And don't send it in capillary tubes. The best container is the Keidel tube. The next best is to slant it in a test tube at least one-half inch wide and close with a cork. Never use absorbent cotton or gauze.

The Public Health Laboratory is a free laboratory. We run about 150 tests a day and we don't care whether your patient is rich or poor or what his name is. All we ask is that you do not charge for them when you get them free. If you want the patient to pay, send the specimen to a private laboratory.

DR. WILLIAM LITTERER, Nashville (closing): I thank Dr. Krauss for his discussion. It was four years ago when I heard Kahn read his paper before the American Medical Association at St. Louis. I got immediately in touch with him and started on the test. I had been experimenting with precipitation tests about a year before.

It was at least five or six months before I could get very much out of the Kahn test. I made some modifications at that time and finally obtained more satisfactory results. Kahn has since modified his technique and has made it more refined until now I think as Dr. Krauss and practically everyone else that some of the precipitation tests are here to stay. In Europe they seem to be using the Minicke and Sachs-Georgi tests and getting very satisfactory results. The precipitation tests have only been intensively studied up to five years ago. Another five years in my opinion will see the demise of the Wassermann test.

THE TREATMENT OF INJURED JOINTS*

WM. SAILER ANDERSON, A.B., M.D., F.A.C.S., Memphis

FOR some unknown cause, hardly explainable, the treatment of joint injuries and infections did not, until the past few years, make much progress.

The World War brought to light the fact that, with the method of treatment that had been practiced for years, the mortality rate was very high; in fact, during the first two years of the war the mortality from knee joint injuries was above 27.5 per cent, but during the last two years it dropped to less than one per cent.

What a wonderful lesson was learned; and it can be truthfully stated that one of the greatest lessons learned from this great world struggle for democracy was the revolutionary changes brought about in the treatment of joint injuries.

We have learned that the synovial fluid is a mighty agent in combating injury and infection. The old must forever give up to the new; the time-worn methods of locking up joint injuries in fixed casts for long periods of time has been compelled to give away to the newer methods of proper fixation, judiciously applied massage and early mobilization.

Upon the proper manner in which these are used can we measure our final results in obtaining useful and proper functioning joints.

MASSAGE

This should be of a gentle, soothing, superficial type, made in the long axis of the limb and toward the trunk. All pounding, punching and beating, a la chiropractor, are strictly to be avoided.

Movement in the early stages of a traumatized joint, which is not infected, is harmful; the joint must be kept at rest so that the damaged tissues may undergo re-

pair. But here massage is beneficial after a few days. Properly given, it helps to allay pain, inhibits muscular spasm, keeps the muscles from losing in strength and causes a rapid reduction of the oedema around the joint.

This to my mind is a most valuable agency, and if possible it should be started rather early following the injury, and continued until the functions of the member injured are fully established.

MOBILIZATION

Whether it be active or passive will be considered together, for motion is the natural function of muscles and joints, and is the best stimulus to their nourishment and tone. But, as all traumatized joints are actively inflamed, we must be careful not to manipulate to the point of pain, for pain is nature's method of protection by inhibiting voluntary movements. Early motion which does not produce pain is therefore not harmful but beneficial.

When is the proper time to begin motion? This calls for good judgment and several factors may enter into it.

To illustrate: It is readily understood that the use of passive motion when the seat of fracture is very tender and vascular is to be condemned. By eight or ten days sufficient union will have taken place in a femur and here much more care has to be exercised than if the injury was to the radius. In a Colles, movement is advised early.

WRIST JOINT

The most common of all fractures involving a joint is the fracture of the lower end of the radius—the Colles fracture.

Many are the ways that it is treated and equally varied are the results. No matter what type of splint be used, the chief es-

*Chairman's address read before the Association of Railroad Surgeons Section, Tennessee State Medical Association, Memphis, May 11, 12, 13, 1926.

entials to good results is to use one where free finger motion can be had, together with early and frequent massage. In cases uncomplicated by fracture of the styloid of the ulna gentle antero-posterior motion is advised. The surgeon should grasp the patient's wrist while the forearm is held in an upright position. This should be started in five to seven days. It is advocated daily, beginning slowly and not to the point of pain. By this means the splints can be dispensed with much earlier and the joint function is practically normal and the arm can be used in far less time than was required by the older method of prolonged immobilization.

ELBOW JOINTS

Fractures in and about the elbow joint likewise should have very careful care. Some authorities favor long immobilization, while others strongly advocate very early mobilization, usually beginning with five to seven days.

It has been the writer's practice in this type of case to strike a medium between the two extremes, beginning passive motion in ten days to twelve days.

If the fracture involves the internal condyle the object is to bring the fractured condyle as close to the shaft as is possible and for this reason we pronate and hyperflex the arm; whereas if it is a fracture of the external condyle we supinate and hyperflex.

SHOULDER JOINTS

In the treatment of the fractures of the shoulder joint there has been a great improvement during the past few years.

Some authorities advocate putting these cases to bed, the arm being put up in abduction and external rotation after effecting reduction, and so kept for ten to twelve days, and then the arm is brought to the side and forearm placed in a sling, where our attention can then be applied to the treatment of the soft parts of the arm.

If the patient can be allowed up and about after first few days an abduction cast which includes the elbow can be kept much more comfortable than in bed and it is this method of treatment we advocate, for it

has been very satisfactory in my hands.

KNEE JOINTS

In intra-articular injuries of this joint there is usually quite a secretion of bloody fluid into the joint, and it is here that early aspiration should be advocated. To allow this increased tension in the capsule to remain, considerable damage will be done, with relaxation and a resulting unstable joint.

The aspiration by the relief of tension likewise relieves the pain. If the capsule be lacerated it should be sutured and drained. Col. Williams, of Belgium, has taught us what can be done in our infected joints and many joints are now saved by this method that were formerly doomed to stiffness. His treatment, which has proved very satisfactory in my hands, is where there is infection in the joint to make an early incision into the joint on the lateral aspect, introduce no foreign material into the joint, as formerly, leave the incisions open and have the patient begin movement of the joint at once, at least several times daily.

Active motion increases the flow of the synovial fluid, one of nature's best antiseptics and a good functioning joint is the result, which means much to both employee and employer.

The injured smaller joints must be given the proper consideration, especial care being given to fingers and toes.

Often these fractures can be so treated as not to interfere with their healing and the patient can be kept at work.

In other words, keep your patient satisfied both physically and mentally, for if you have his co-operation he is willing to resume work at an early date, is grateful, and many days of waiting for settlement avoided, which is a great advantage to all concerned.

DISCUSSION

M. B. HENDRIX: I think that Dr. Anderson has given us a very timely paper. Our Colles' fractures should have early passive and active motion.

For a number of years I have used a very simple splint, one prepared from a plaster of Paris ban-

dage, three or four inches in width and molded to the dorsal surface of the arm, extending from the elbow down to the knuckles and held in place by a two-inch roller bandage; such a splint is easily removed. Give the wrist motion, bathe the arm in alcohol and reapply the splint.

The point mentioned in regard to suppurating knee joints is very important. Give good, free drainage by incision, but do not use drainage tubes in the knee. It is remarkable the progress that has been made along this line in the last few years.

NEXT ANNUAL MEETING

TENNESSEE

STATE MEDICAL ASSOCIATION

CHATTANOOGA

April 12, 13, 14, 1927

THE JOURNAL

OF THE

TENNESSEE STATE MEDICAL ASSOCIATION

Devoted to the Interests of the Medical Profession of Tennessee

Office of Publication, 420 Jackson Bldg., Nashville, Tenn.

J. F. GALLAGHER, M.D. -----Editor

SEPTEMBER, 1926

EDITORIAL**DR. CUSHING COMPLAINS**

In this issue of the Journal (page 141) may be found a letter received from Dr. Harvey Cushing of Boston, relative to an editorial which appeared in this Journal recently. All things considered, this letter reveals an unusual state of mind in a person whom some have spoken of as great. However, it is not an altogether unheard of attitude assumed by some who have attained a wide reputation for intellect and ability, especially if they happen to be born and educated in a locality which is known to be notoriously provincial. Some one has said that the Back Bay district is a place where the "Lodges speak only to the Cabots, and the Cabots only to God."

The letter above referred to was occasioned by the editorial which was brought to Dr. Cushing's attention; by whom he did not say and therein lies room for speculation.

The editorial was inspired by the reading of an address which Dr. Cushing delivered to the graduating class of the Jefferson Medical College and which was published in the Journal of the American Medical Association of August 21. This address was devoted largely to the unsettled question of medical education, and the position taken was so thoroughly in accord with what many teachers of medicine think to be the correct position that it was briefly emphasized in an editorial which appropriated Dr. Cushing's title: "Consecration Medici."

It is not the purpose of this editorial to go into a lengthy discussion of the merits of the various methods of medical teaching though the merest tyro could glean from

Dr. Cushing's Jefferson College address, and other addresses delivered by him, that he takes the position that the best type of medical instruction is not to be obtained from the full-time clinician who has not had previously a wide practical experience; that undue emphasis is being placed by some medical schools on the laboratory courses and, to quote Dr. Cushing, to the developing of "researchers, God save the mark."

Dr. Cushing states that he is "not sure but that 'H. M. T.' who signs the editorial has read more into his words than he was entitled to." The facts would appear to be the reverse and that Dr. Cushing has read more into the editorial than he was entitled to, for he seems to infer that he has been accused of speaking "scornfully of medical research" and as being quoted "as having said anything to belittle the importance of the Foundations of which your editorial speaks slurringly." These remarks are gratuitous and are to be resented. It would appear that they were written without due reflection or were prompted by some sensitive extraneous source.

And it is strange, 'tis passing strange, that a resident of the cold, effete East should remind the South of its reputation for hospitality.

DEATHS

Dr. E. T. Lewis of Erin, aged 77, died August 30th. Dr. Lewis graduated at the University of Nashville, Medical Department, in the class of 1874.

Dr. R. H. Ward of Fowlkes, aged 50, died September 2d. Dr. Ward was a graduate of the University of Arkansas, Medical Department, Little Rock, in the class of 1912, and was a member of the Dyer County Medical Society at the time of his death.

Dr. John D. Alexander, of Tiptonville, aged 55, died September 10th. Dr. Alexander was a graduate of the University of Nashville, Medical Department, in the class

of 1898, and was a member of the Lake County Medical Society.

Dr. J. P. Mackey of Sardis, aged 64, died September 7th. Dr. Mackey graduated from the Medical Department, University of Tennessee, in 1894.

Dr. A. B. Ramsey, of McMinnville, aged 64, died September 17th. Dr. Ramsey was a graduate of the University of Nashville, Medical Department, in the class of 1884, and was a member of the Warren County Medical Society.

Dr. George C. Paschall, aged 60, died September 22nd. Dr. Paschall graduated from the University of Louisville in 1890 and was a member of the Williamson County Medical Society.

Many of the older residents of Covington will learn with regret of the death of Dr. Sanders M. Payne, of New York City, which occurred September 14th. Dr. Payne was a well known physician of that city.

NEWS NOTES AND COMMENT

Dr. R. P. Wood, who has been connected with the Laboratory of the Knoxville Gen-

eral Hospital for several years, has opened offices in the Medical Bldg. He will do general practice.

Dr. Sam T. Parker has moved from Lexington to Jackson where he will practice in the future.

Dr. M. W. Caveney, formerly of Champagne, Ill., has located in Chattanooga where he will practice his specialty of eye, ear, nose and throat.

The friends of Dr. J. K. Freeman of Bell Buckle will learn with regret that he sustained a broken leg recently.

Dr. F. E. Marsh has located in Cleveland, Tennessee, and is connected with the Speck Hospital.

Dr. Thomas Slayden has opened offices in the General Building, Knoxville. Practice limited to ear, eye, nose and throat.

Dr. Henry Clay Long of Knoxville married Annette Steele of Knoxville, Sept. 17, 1926, at St. Johns Episcopal Church, Knoxville.

Dr. Joe Taylor Smith of Knoxville married Josephine Streeby of Kansas City, Mo., Sept. 16, 1926, at Nashville, Tenn.

CORRESPONDENCE

The following letter was received apropos of an editorial which appeared in the June issue of the Journal of the Tennessee State Medical Association.

Dr. J. F. Gallagher,
420 Jackson Building,
Nashville, Tenn.

Dear Sir:

An editorial in your excellent Journal, on the subject of my recent address before the Jefferson medical students, has been brought to my attention. I am pleased that the address should have been worthy of notice, but at the same time I am not sure but that 'H. M. T.' who signs the editorial has read more into my words than he was entitled to.

I am the last person to speak scornfully of medical research, having spent the happiest and most profitable portion of my medical life in an experimental laboratory which I helped to found. It was not my intention, therefore, to speak disparagingly of the medical sciences and medical scientists, but rather to say some heartening things to the general practitioner who in these days when the laboratory is emphasized—and I think unduly emphasized—is apt to be forgotten. He may himself have had no opportunities to engage in laboratory experiments nor capacity for the same, and yet he represents the backbone of the profession and may be able to do what he has to do the better for more practical experience with patients and for less time spent on the fundamental sciences.

It therefore hurts me a little to have the address quoted as having been written in opposition to such schools as the country is fortunate in seeing founded and of which you have a notable example in your midst.

What is said in the last paragraph of the editorial is precisely what was said against the Johns Hopkins when it was founded, and yet you would not, I am sure, underestimate the contribution which that school has made to medicine. I do not wish, therefore, to be quoted as having said anything

to belittle the importance of the foundations of which your editorial speaks slurringly. I am sure that they have a brilliant future ahead of them. My address was written for the graduates of Jefferson, not for those of Vanderbilt; that would have been a different story. There is plenty of room for schools of both types. Nashville will some day be made famous by her new medical school, just as Baltimore has been. It behooves those of you, therefore, who sit on the sidelines to give the school the kind of hospitable welcome that the South is capable of, rather than words of discouragement.

Very sincerely yours,
(Signed) HARVEY CUSHING.

The above letter was shown Dr. H. M. Tigert, author of the editorial, and he replied as follows:

Dr. J. F. Gallagher,
420 Jackson Building,
Nashville, Tennessee.
My dear Dr. Gallagher:

I have read with great interest the letter of Dr. Harvey Cushing written you on October 2, 1926, relative to my editorial which appeared in the June issue of the Tennessee State Medical Journal.

I think a fair reading of Dr. Cushing's article will reveal that he, unintentionally perhaps, rendered his article susceptible to the interpretation which I placed upon it rather than that I have read more into it than a reasonable construction would justify. There can be no doubt that the address contained numerous and very definite reference applicable to the type of medical college dealt with in the editorial.

That intelligent research is the very basis of medicine is a proposition concerning which there is and can be no difference of opinion. In the Journal of the American Medical Association dated March 15, 1924, there appears an article read by Dr. Cushing before the Annual Congress on Medical Education, Medical Licensure, Public Health and Hospitals at a meeting in Chicago on March 3, 1924, which I read at the time of its publication. In this article he

deals quite pointedly with undergraduate research so that his views along this line in "Consecratio Medici" were not altogether novel.

As the last paragraph of the editorial states that Dr. Cushing sheds a calm, judicious and dispassionate light upon this type of school, I cannot believe that the readers of the editorial would construe Dr. Cushing's address as belittling or scornful. It certainly was not my intention that they should.

I am,

Sincerely yours,

(Signed) H. M. TIGERT.

Herewith is reproduced the editorial which occasioned the above correspondence.

CONSECRATIO MEDICI

Taking the above caption as his theme in the commencement address to the graduating class of the Jefferson Medical College, Dr. Harvey Cushing, of Boston, one of America's premier surgeons, a pioneer in his chosen specialty, an erudite scholar and gifted teacher, delivered a message worthy to be heard and pondered over by all who are interested in medical education and the future of our profession.

The path of science is always fraught with innumerable problems and unending tasks, and these multiply amazingly under the influence of rapid progress.

In their enthusiasm and eagerness to be the standard bearers of advancement, workers not infrequently suffer a distortion of perspective and lose their sense of proportion, thereby giving rise to what might be properly called the by-products of science. This, among other things, makes truth elusive.

What has been said is particularly true

of medicine, although it has made more progress in the last few decades than in all its former history.

Science or knowledge properly evolved should serve at least two ends: first, to so benefit mankind that the utmost may be achieved by the living; and second, it **must** find a means for its own continuation and advancement.

In medicine the chief burden of the latter function rests on the various types of medical schools. A great diversity of opinion has always existed with reference to the best methods for instructing the neophyte. The old order of medical teaching which has brought forth such a rich and abundant harvest, is now giving way to a new order of things in which the relationship between doctor and patient is not so much emphasized as that of research.

Now that undergraduate medical students are being instructed in the high art of research before they have learned to search, we may confidently look forward to the near future when infants will be taught to sing before they can talk.

In America, at the present time, a small group of medical schools richly endowed with the sinews of war, if not with practical experience, has been precipitated into the vivisectorium in which the vivisectionists, undisturbed by any thought of the morrow, and aloof from their professional contemporaries contending with mere mortals, calmly proceed with the fascinating study of: Why are medical schools?

Dr. Cushing sheds a calm, judicious and dispassionate light upon this curious phenomenon which will enable those with ears to hear and those with eyes to see.

H. M. T.

MEDICAL SOCIETIES

The sixty-fourth meeting of the Middle Tennessee Medical Association will be held in Dickson on November 11th and 12th.

The Carroll, Henry and Weakley Tri-County Medical Society met at McKenzie September 14th. Dr. William Applehouse of Louisville, Kentucky, was a guest of honor.

MISCELLANEOUS

OUR OBSTETRIC AND GYNECOLOGIC RESPONSIBILITIES

George Gray Ward, New York (Journal A. M. A., July 3, 1926), says, in part: The fact that some expert obstetricians can more or less safely hasten labor by operative intervention, thus saving themselves time and shortening the patient's immediate ordeal, together with the national tendency to hurry in the rush incident to competitive practice, has been the cause of the general practitioner and many so-called specialists drifting away from the well proved if circuitous lanes of safety to those dangerous short cuts which too often lead to disastrous results for both mother and child. He who attempts to make nature deviate from her normal physiologic processes must remember that, while he may accomplish his immediate object, it is very apt to be at an exorbitant price. Patience is the better obstetrician, in the majority of cases, than dexterity. Haste is not compatible with thoroughness in the practice of medicine and tends toward developing a commercial aspect instead of a scientific one. The lack of productiveness in research by American obstetricians has been deplored. This sterility is not entirely the fault of the teachers themselves, but is in great part due to the lack of appreciation by many educa-

tional authorities of the importance of obstetrics as one of the fundamental branches of medicine, and that proper provision is not made for a fully equipped department of sufficient size to allow of abundant opportunities for teaching. In most schools, obstetrics is the least cared for department. Is it any wonder that obstetric research is dormant under such circumstances? The union of obstetrics and gynecology is essential if we are to expect better obstetric research, as the physiology and pathology of the reproductive system of woman must be considered as a whole if we are to solve successfully the problems that are so interwoven with both sciences. The intimate relation between obstetrics and gynecology that exists in European clinics has, unfortunately for both branches of the specialty, not found universal application in this country. Gynecology in its beginnings was largely reparative and therefore surgical, and its tendency was to develop independently for this reason. But in recent years there has been an awakening to an appreciation of the broader gynecology, which comprises all phases of the reproductive function and of which surgical therapy is only a part. The gynecology of today has undergone a great expansive change from the gynecology of yesterday, which was largely confined to the narrow field of operative technic. This broader development which has taken place is largely the result of the application of the fundamental principles of physics and chemistry in the study of life processes, and through the sciences of biology, biochemistry and genetics, a better appreciation has been brought about of the intimate relations existing between the reproductive organs and the body as a whole. As the study of medicine has now become a study of biologic science, our hope for future progress in the specialty must lie in part in that direction. The physiologic chemist and the biologist must work hand in hand with the clinician in both the operating room and the laboratory to this end. It is essential that we should first

know the normal processes of nature in order to be able to cope with abnormal changes. A better knowledge of the physiology of the reproductive system, of which we know very little at present, must be our immediate goal.

THE JOURNAL OF THE TENNESSEE STATE MEDICAL ASSOCIATION

DEVOTED TO THE INTERESTS OF THE MEDICAL PROFESSION OF TENNESSEE

ISSUED MONTHLY, under Direction of the Trustees

J. F. GALLAGHER, M.D., Editor and Secretary

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Number 6

THE QUESTION OF AN ADEQUATE SUPPLY OF RURAL PHYSICIANS IN TENNESSEE, BASED ON A STATISTICAL STUDY OF RELATIVE NUMBER AND AGES OF URBAN AND RURAL PHYSICIANS FOR A TWENTY-YEAR PERIOD*

W. J. BREEDING, M.D., Nashville

SOME weeks ago the writer and his associate in office, Dr. Dorothy L. Heller, decided that an investigation, to determine the relative number and ages of physicians practicing in rural and urban communities in Tennessee might be of interest. Much of the tedious work of compiling the information and making the graphs has been done by Dr. Heller, to whom the writer acknowledges his indebtedness.

The members of the State Medical Association have been taken as a basis for this investigation and the ages of physicians have been secured from the date of birth as recorded in the American Medical Directory. It is believed this group constitutes a fair sample, and its distribution may be taken as representative of the total distribution of all practicing physicians.

Last year work with the State Department of Health carried the writer to every county seat in Tennessee and necessitated contact with health officers and physicians in each county. Some inquiries were made about the status of the local medical societies, the number of physicians in the county, where located, road conditions, ages of

physicians, etc. The apparent scarcity and advanced age of physicians residing in small towns and country districts, and the almost total absence of medical students, as well as the great difficulty and expense with which some rural sections are furnished medical service, was distinctly noticeable. It has long been apparent, much as it is to be regretted, that the old-time conservative practitioner, who has always preferred rural to urban life, is rapidly disappearing, due, not alone to a change in economic and social environments, but chiefly to the infirmities of age and death. Younger men are not filling these vacancies, and as a consequence a fertile field in many localities is left, in which patent nostrums, quacks and mountebanks flourish.

We have selected for comparison the status of the profession in 1906 with 1926, because in 1906 we had the typical old order of practice. At this time the effect of the automobile and good roads on the change in economic and social conditions was negligible, and the telephone was a curiosity in many places. The rural physician, in his isolation, had a monopoly on medical practice, and although his fees were small, the demand for medical attention was adequate, because typhoid, dysentery,

*Read before the Tennessee State Medical Association, Memphis, May 11, 12, 13, 1926.

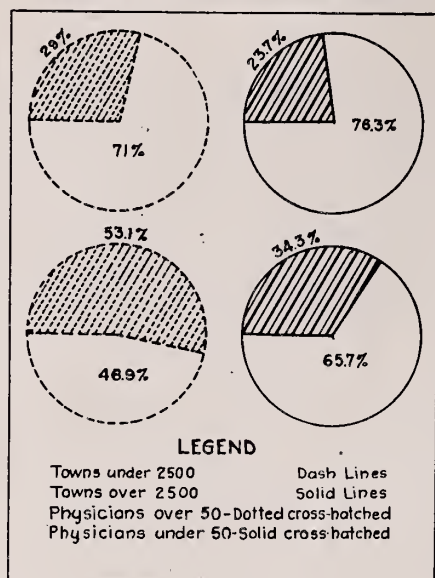
malaria, diphtheria and diarrheal disease flourished and furnished a long list of calls, the remuneration from which, in the aggregate, amounted to a respectable income, commensurate, of course, with ability, industry and physical endurance. Office equipment was comparatively inexpensive, travel on horseback or buggy a small item of expense, the population was more stable, and cost of living comparatively negligible. The physician was monarch of all he surveyed and sallied forth to match his wits with infectious diseases, the cause of many of which was practically unknown. The city physicians had but small advantage

1,456 (or an increase of only 231 in twenty years), with 749, or fifty-two per cent, in the six larger cities, and 707, or forty-eight per cent, in small towns and rural districts. An increase is thus shown of 358, or twenty-two per cent, in the cities, while the rural districts show a decrease of 127, or seventeen per cent. An analysis of Census Reports shows that during this same period a marked drift of population and wealth has been cityward. The increase in city population has been about sixty-one per cent, while the increase in the country has been only five per cent.

The relative number of physicians to

DISTRIBUTION OF TENNESSEE PHYSICIANS OF OVER AND UNDER 50 YEARS OF AGE IN 1906 AS COMPARED WITH 1925

TENNESSEE STATE DEPARTMENT OF PUBLIC HEALTH

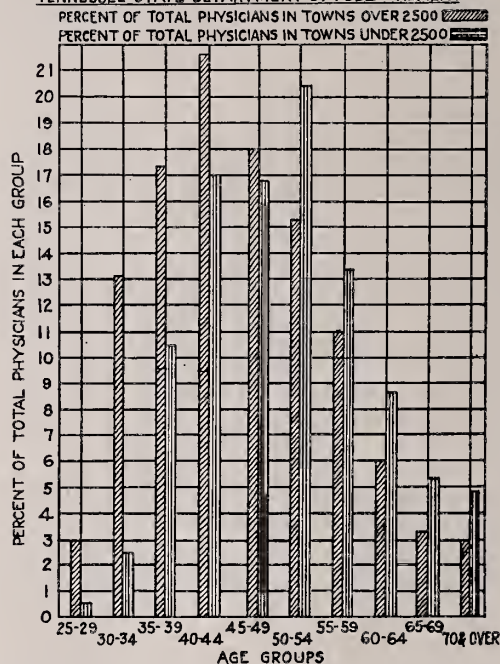


over his rural brother, and it was not an infrequent observation that a country doctor of industrious and frugal habits had, by many years of arduous work, accumulated a competency, and in this respect had outstripped many of his city brothers who had been in practice for a similar period of time.

In 1906, out of a membership of 1,225, 391, or thirty-two per cent of our number, were practicing in the six larger cities, while 834, or sixty-eight per cent, were country doctors. Let us contrast this with our present status of a total membership of

DISTRIBUTION BY AGE GROUPS OF PHYSICIANS IN TENNESSEE TOWNS OF OVER AND UNDER 2500 POPULATION —1925—

TENNESSEE STATE DEPARTMENT OF PUBLIC HEALTH



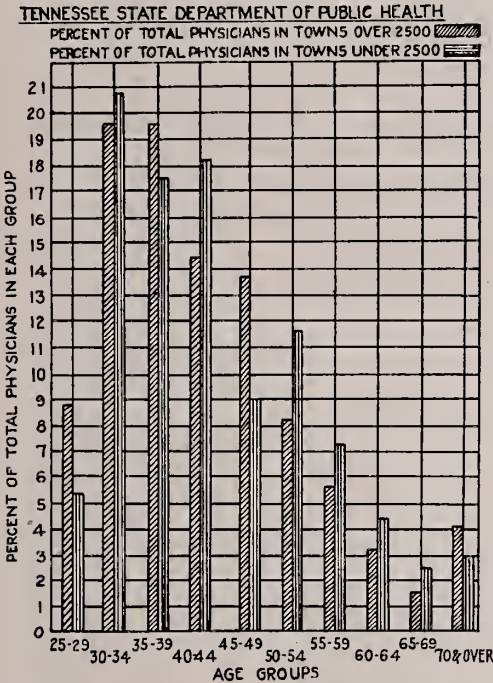
population is likewise interesting, as shown by the attached tables:

Possibly there is a larger per cent of physicians in societies in urban than rural areas, though this perhaps was true in 1906 as in 1926, so our problem in Tennessee is not so much a general shortage of physicians as it is an unequal distribution.

In 1906, about two and one-half times as many persons per physician were residing in rural areas as compared with the number of population to physicians in urban areas.

In 1926, four times the number of persons per physician were in rural as compared to urban areas, yet in 1906 the state as a whole showed 1,729 persons per physician, and in 1926, 1,659 persons per physician, or actually a relative increase in medical service, taking the State Association membership as a basis. If the surplus of physicians in the cities could be distributed to vacancies in small towns and country districts, the supply would be adequate, or about as adequate, as it was twenty years ago, when a scarcity of physicians

DISTRIBUTION, BY AGE GROUPS, OF PHYSICIANS IN TENNESSEE TOWNS OF OVER AND UNDER 2500 POPULATION —1906—



in either city or county was rarely mentioned. The question of what is an adequate supply of physicians is a mooted one, and varies greatly according to density of population, the incidence of epidemics, topography of the country, road conditions, the industry of the physician, modes of travel, and seasonal variations. For example: a certain number of physicians in a town of 2,500 might be entirely adequate for nine months during spring, summer and fall, but entirely inadequate for the three winter months. The city doctor may visit from ten to 100 or more patients during the day, while the country doctor must

sometimes travel until late at night to see a "baker's dozen." In country districts, where there are no hospitals, emergencies require much time.

A minor surgical operation means preparation of patient, selection and preparation of room, table and containers, sterilization of instruments, selection of assistants, etc., all to be done by one man—the doctor. An operation requiring only a few minutes or one-half hour in your city hospital with trained assistants requires for the same operation in a country farm house hours of tense work. Your country doctor must adapt himself to all kinds of emergencies requiring a maximum of time, these coming sometimes at short, and at other

RELATIVE NUMBER OF POPULATION, CITY AND COUNTRY TO MEMBERS OF TENNESSEE MEDICAL ASSOCIATION 1906 AND 1925

TOTAL PHYSICIANS	NUMBER OUTSIDE 6 LARGER CITIES	NUMBER OUTSIDE 6 LARGER CITIES	POPULATION 6 LARGER CITIES	POPULATION RURAL	NO. POP. TO 1 PHYSICIAN CITY	NO. POP. TO 1 PHYSICIAN RURAL
—1906—						
1,225	391 or 38%	834 or 68%	314,071	1,805,048	803	2,164
—1925—						
1,456	749 or 52%	707 or 48%	507,079	1,907,689	671	2,698
DEDUCTIONS FROM ANALYSIS OF STATUS OF MEDICAL ORGANIZATIONS FOR PERIOD OF 20 YEARS 1906 TO 1925						
Number of counties having local medical organizations - 1906			63			
Number of counties having local medical organizations - 1925			65			
Number of Physicians practicing where they were in 1906			314 or 22%			
Increase in number of members			231 or 18%			
Increase in city members			358 or 20%			
Decrease in rural members			127 or 20%			
Increase in population - city			193,008 or 61%			
Increase in population - rural			102,641 or 5%			
Decrease in population to one Physician - city			132 or 19%			
Increase in population to one Physician - rural			534 or 20%			

times long intervals. Today he must argue the point with a hysterical woman, from a paling on the backyard fence he must fashion a splint for a fractured femur; at midnight he is called "to do a forceps in a higher operation"; repair a lacerated perineum, and treat post-partum hemorrhage, all single-handed and alone. Tomorrow he may be called to diagnose an acute abdomen or witness puerperal convulsions from neglect of pre-natal care. Is it to be wondered at that in the fifth and sixth decade of life "the curly pate becomes bald, the straight back becomes stooped, the good leg begins to fail, the good heart like the sun and moon, or rather like the sun, and not the moon, for the moon changes, but the good heart never changes." Is it at all

to be wondered at that the doctor's son refuses to adopt the career of his father?

It is very apparent that a relatively larger number of physicians to population is necessary to meet the demands in country practice, and an unequal distribution of sickness throughout the year creates waves of work and play expressed as "run to death," or "distressingly healthy."

With increased achievements in epidemiology it is probable that, by the enforcement of prophylactic measures, the intensity of such epidemics can and will be greatly reduced.

A study of the relative percentage of physicians over and under fifty years of age in the towns of 2,500 and over, then (1906) and now, shows an approximately equal number of doctors above and below fifty years of age in both city and country, viz.: seventy-one per cent of physicians under fifty years of age in towns under 2,500, and 76-3 per cent in towns over 2,500.

At the present time we have 65.7 per cent of physicians under fifty years of age in towns over 2,500, and 46.9 per cent in towns under 2,500. We, therefore, can see that we have the following outstanding problems: (1) An unequal distribution of physicians but not necessarily a shortage; (2) epidemic waves and other emergencies from time to time, overtaxing the capacity of the country physician; (3) the expense of sickness falls heaviest on people in rural sections who are least able to meet it; (4) the advanced age of physicians in small towns and rural districts renders them less able to meet the hardships incident to the manifold emergencies of country practice; (5) an abnormal flow of population, wealth and physicians cityward.

Many additional problems have been emphasized by others. We are told that young men will no longer locate in small towns, and that the majority of medical students are city-bred and in the city they will stay; that physicians are only showing good judgment in following the drift of population and wealth; that hospital, laboratory and nursing facilities in small towns are such as to prohibit the practice of scientific

medicine as it is taught today; that the cost of medical education prevents all except the well-to-do from studying medicine; that standards of living, social and educational, are not such as would attract young men or retain them long in the country, and it has been suggested that medical standards of education should be reduced or even a double standard—one for those who practice in country and another for cities. It may be that there are occasional "grains of truth in these bushels of chaff," but it is likewise true that country people are "subject to the same disease, healed by the same means and warmed and cooled by the same summer and winter," and are, therefore, entitled to as high or even higher standards of medical skill than any other group of our population. It would be an injustice to impose on them a class of incompetents where the very economic stability of the nation depends upon the health of our rural population. The lowering of medical educational standards will not meet the indications or demands, because it is a well-known fact that the bounds of medical science have been extended so as to include so many allied fields, that it is impossible for a student to obtain the basic knowledge necessary for clear thinking and safe practice within a period of time short of the present standards.

It is insisted that some of the best medical talent of our time was educated under the old short time standards. If we follow the history of these men closely we find that they have been close post-graduate students and their medical education was commensurate, at that time, with the circumscribed field of medical science, but, as medical science has advanced, their education has likewise been extended to include these additional fields. It has been abundantly proven by other investigators that physicians do business where business is good, and avoid places where business is bad and this will not be changed by giving them a cheaper education.

A solution of the rural physician problem involves a broad and comprehensive consideration of many intricate questions of manufacturing, commerce, agriculture

and various other local and industrial questions affecting "the general welfare." It can only be solved by a natural readjustment which has been a leading factor in smoothing out such irregularities and will be a chief element in bringing about an equitable distribution of physicians. At the present exodus of physicians to cities which (according to Dr. Pusey is twenty-five to fifty times greater than that of the population), it is an inevitable conclusion that an overflow and a movement back to the country will soon be forthcoming. Just as the scarcity of any commodity increases its cost, and vice versa, so medical fees will be adjusted.

Someone has said that Tennessee has become top-heavy on agriculture, and that we need to "dilute our agricultural activities with manufacturing enterprises," which is, apparently, true. The improvement in labor-saving devices has diminished the demand for farm labor, enabling the farms to produce with a minimum of labor.

All indications point to the fact that capital is looking toward the South, and that we are on the eve of the greatest industrial awakening ever known. Since we have in Tennessee one-fourth of all the waterpower in the United States, and a lion's share of raw material, it is but a natural conclusion that ere long the noise of manufacturing industries will be heard throughout the South. This, together with our good roads, will do much toward the dissemination of physicians. Dr. Raymond Pearl's analysis of reports of the General Educational Board shows that each addition of \$100 per capita wealth means that approximately one physician to each 30,000 population will be added.

But if we expect capital to develop our natural resources, we, as physicians, should begin to put *our house in order*. Sanitation should precede and not follow industrial development, as has been abundantly proven at Panama and Havana. Malarial problems following in the wake of impounded waters must receive due consideration.

A *clean up Tennessee* slogan should go forth. The open privy should be abolished,

pure water and wholesome food assured, and filth-borne disease exterminated.

The possibility of an extension of our knowledge of preventive medicine in compensating, in a measure, for a shortage of rural physicians, has not received the emphasis that its importance demands.

Dr. Wendell Phillips, president-elect of the American Medical Association, recently said in an address at Dallas, Texas: "There has been a slight awakening of the medical conscience as to the trusteeship of physicians as promoters of individual and community health—physicians only are qualified by heritage, by education and experience to give to the public the basic principles of health preservation, and the protection of life that is afforded by sanitation and the scientific application of all the phases of preventive medicine. Given such responsibility, I ask you, in all seriousness, whether the medical profession of the country has ever lived up to its great opportunity to teach the people how to keep well."

If we can overcome the difficulty of getting the well to the physician for examination and instruction before it becomes necessary for the physician to visit them in sickness; if the pre-school and school child can be examined, defects noted and referred to family physician for treatment; if every school child in the state could be immunized against typhoid and diphtheria and vaccinated for smallpox; if sanitary disposal of human excreta could be controlled and a safe water supply insured; if the anopheles mosquito could be exterminated from our state; if the expectant mother could receive proper pre-natal care; if pre-cancerous and other surgical conditions could be diagnosed and passed to the hands of the surgeon while surgery is curative; in short, if well known preventive measures could be applied to the needs of rural communities, then a long stride will have been made toward compensating for whatever shortage in medical service we may have, and the physician would be relieved of much charity practice with which the profession is now burdened.

While it is a fact that young men are not

attracted to the country to practice curative medicine, it is true that they will go as full-time health officers for two reasons: First, because of the assurance of a moderate income from the beginning, and, second, because he has ample opportunity and facilities for applying his knowledge of preventive medicine and is able to visualize and estimate the results of his work. The field of preventive medicine has been extended within recent years to such a degree as to demand that more emphasis be placed on prophylaxis to the end that a better balance in the practical application of preventive and curative medicine may be applied in rural communities.

Sufficient stress should be placed on the importance of full-time county health officers by our medical colleges, to the end that an equitable balance between the output of physicians to practice preventive and curative medicine may be secured.

The economic value of full-time county health departments to aid the physician in the control of epidemics, and to enforce sanitary measures is no longer an experiment, as has been abundantly proven by the record of the 300 counties in the United States having such departments. In two Tennessee counties the death rate from typhoid has been reduced eighty per cent over a five-year period. We are coming more and more to the conclusion that the expansion of county health unit activities in counties showing a shortage of physicians is a valuable compensatory measure.

CONCLUSIONS

1. There are four times as many physicians in proportion to population in the six larger cities, as in the remaining portion of the state.

2. More time is required to do a given amount of medical work in the country,

therefore a larger proportion of physicians to population is required.

3. It is evident that the state as a whole has as adequate supply of physicians now as in 1906, and the problem is, therefore, one of unequal distribution rather than actual shortage.

4. Taking the state as a whole, the supply of doctors is about as adequate as it was twenty years ago, but an increase of twenty-two per cent is shown for cities and a decrease of seventeen per cent for country.

5. An increase of sixty-one per cent in population is shown for cities in twenty years, and an increase of only five per cent for the country.

6. The number of population to one physician has decreased 132 in the six larger cities in twenty years, while the number of population to one physician has increased 534 outside of the six larger cities for the same period of time.

7. A much larger percentage of men over fifty years of age are practicing in small towns.

8. A lowering of standards of medical education is illogical and unjust to the public that physicians must serve.

9. The law of supply and demand will ultimately result in a more equitable distribution of physicians, and this would not be hastened by altering our medical educational regulations.

10. State-wide sanitation is a prerequisite to industrial progress, which in turn increases per capita wealth, and physicians follow the drift of wealth, as do all classes of producers.

11. Development of full-time county health departments is of much economic value, and an aid in compensating for a shortage of rural physicians.

THE RURAL MEDICAL SITUATION*

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IN reading this paper I realize I am coming before a body of physicians most of whom are from the cities. This is necessarily so because the cities' greater population demands the majority of all doctors. And since the city doctor cannot know the true condition of country practice, I chose this subject in the hope that my experience and observation might throw some light on this widely discussed problem.

We all know that fewer doctors than ever are going to the country, that places that used to have three or four now have only one or probably none.

So much is being said about how to remedy this condition, when really it does not need a remedy; it is as it should be. The country does not need them. After careful observation and study I believe that the problem of medical care of rural communities is to be solved not by supplying an inferior grade of physicians but by education of the rural population to the fact that they are being given the same high-class doctors that any other people have.

When I hear or read of some doctor advocating a high school diploma and three-year medical course for rural doctors, a college degree and five-year medical course for city doctors, I know that he either doesn't know a thing about country people and rural conditions or else he has some selfish motive in view.

There cannot be two classes of physicians in the United States, one for the country folks and one for their more favored cousins of the cities. In other words, I have no faith in the idea of poor doctors for poor people.

Twenty-five years ago only six per cent of the medical graduates annually were equal to present day Class A medical school graduates, while over 3,000 graduates of

nondescript schools were turned out yearly.

Of course, as a rule, the better class graduates went to the city, while the inferior ones drifted to the country. Can we wonder then that the country people seek our city specialist even in matters of little importance.

In the year ending 1925 we had 3,974 graduates, 96.2 per cent, or 3,815 Class A school graduates, with less than six per cent of the inferior type.

But we will have to turn now and educate the people to believe in this Class A graduate that comes out to the country.

It has been and always will be necessary to send patients to the large centers for special treatments and surgery, but so many have been sent unnecessarily that country people have become imbued with the idea that country doctors cannot treat them properly for anything.

We must then teach the rural communities that their own doctor is as good as any they can find in the city for such ailments as he can treat—and this will be done by giving them just enough efficient doctors instead of an oversupply of ignorant ones.

Furthermore, the standards of living for rural communities have improved just as everything else has in the past twenty-five years, until they no longer need a doctor at every crossroads and all the way between.

It is true in a few mountainous or sparsely settled communities there may be no doctors, but why make a mountain out of a mole hill—if you should lower the standard of our present day medical education and give these communities inferior doctors of their class and kind, that would be willing to go and live with them, they would refuse to have them and would get the better educated doctors or have none; that is the nature of country folks as I know them.

As a matter of fact a doctor can go twen-

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ty miles in his car to a patient quicker than he could twenty-five years ago in two miles of him.

Twenty-five years ago the doctor had to catch out his horse, either harness him to a buggy or saddle him up, then drive or ride over rough roads or trails. Now, in the time he could do either of those things, the doctor can go twenty miles and step out of his car in front of the patient's door feeling much more like relieving suffering than the one twenty-five years ago. And here it can be said, too, the patient can pay for the twenty-mile trip now easier than he paid for the two-mile visit twenty-five years ago.

I have noticed that all this outburst of regrets for the "poor country people" is coming from city doctors and editors. I have yet to hear of a single country doctor leaving a location because he was making too much money. I do hear and know of them leaving, though, because they cannot make a living.

The fact is we can think of nothing that hasn't improved in the last twenty-five years. Transportation has changed the whole world, and the United States in particular, in that time. Who would think of doing without an automobile? With automobiles go hand in hand good roads, and where you find these two things, a well educated doctor can do more and better work than five old-time country doctors going around horseback with saddlebags, dispensing a lot of sunshine, agreeability and a few pills.

I do not mean to disparage the past country doctors; they have done a great work, and out of the many that have gone before me a few have risen to undying fame, but you would expect from any class or profession a few to rise above the common herd.

What we need to do as physicians is to shut up this rot about everybody going to die if there are not a lot of 2x4 medical schools started up, so that every ignoramus that wants to may start peddling pills.

With the vast mechanical enterprise enabling the individual worker to multiply his skill and strength, goods are produced in such ample quantities that there is an abundance for everyone—will you then grant the doctors the same privilege as other workers. In other words, will you be economic minded enough to put into effect great nation-wide plans to produce doctors with maximum efficiency and minimum waste?

These few people I speak of can understand that on account of the many improvements in farming there is no need for as many farmers as there was twenty years ago. In fact, if there were as many their products would be so cheap they could not live. In the same way there is no need for as many rural doctors as formerly.

But this is a peculiar thing about the situation—these few can see a decrease in everything else rural—and yet they want the number of country doctors kept up, if they starve to death in piles. Why, it's all right, they don't amount to much anyway—just poor country doctors, so let 'em die.

THE RELATION OF THE PHYSICIAN TO THE PUBLIC HEALTH*

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IT is a trite saying, but one so strikingly true that it bears being oft repeated, that health is the most valuable material asset possessed by any people. Its preservation pays better from a financial standpoint and its impairment entails greater loss.

Williams (1) describes health as "that quality of life which renders the individual fit to live most and to serve best." Good health does carry with it a feeling of vigor, comfort and well being which renders one "fit to live most and serve best," while bad health handicaps one in every effort and brings in its train discouragement and despair. There is perhaps no more frequent cause of suicide than hopelessly impaired health. Most serious of all is that incalculable social and economic loss that comes to every community from the continuous, deplorable and oftentimes needless loss of valuable lives from preventable causes.

The medical profession, in its fight against disease in its many forms, has discovered in a great measure the causes thereof and the means of prevention, and this valuable information has been given out to mankind freely and without stint. It has been said, "All that a man hath will he give for his life," and when sickness comes and his life or the life of a member of his family is threatened, the average citizen will spend his substance liberally, even prodigally, to save that life and restore that health; but, being well, he is very reluctant to spend any of his own or the public money to protect that health which he seems to prize highly only when it is lost or placed in jeopardy. People, even the most intelligent people, and their governments have been slow to avail themselves of well-known measures of preventing disease and loss of life and health. Moreover, so hard is it

to believe that any one does a thing costing money, time and effort that is altogether unselfish and altruistic, often times, when the medical profession has suggested and put into operation methods to prevent sickness and safeguard the public health it has been met with opposition, misrepresentation and malignment.

Be it said to the eternal credit of our profession that it has never been deterred from its duty by these discouraging features, but true to the principles of the Hippocratic Oath, i. e., "to practice that regimen which according to my ability and judgment I consider for the benefit and best interest of my patients." It has continued to put the welfare of those it would serve first among the objects of its endeavor, and above any personal or professional interest.

Without attempting to define just what Jesus of Nazareth meant by the Kingdom of God, it is safe to say that he who faithfully puts into practice the above great principle is approaching nigh unto that Kingdom, and it has been well said that "the very existence of public health service in state and in nation, throughout the civilized world, is a monument to the medical profession's faithfulness to that principle." (2)

Organized first, in all countries, to prevent the entrance of some dread epidemic, health boards were given power and financed only when such an epidemic threatened or had gained entrance and needed to be controlled. When the danger passed, such boards usually dropped out of existence or ceased to actively function.

However, slowly, laboriously, but steadily and surely, the propaganda, originated and persistently prosecuted by the medical profession, has brought results, and it is gratifying to see preventive medicine coming into its own, and receiving that recognition

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throughout the world which its importance justifies and deserves.

The League of Nations, in Article Twenty-three, proposes "to take steps in matters of international concern for the prevention and control of disease," and every efficient government in this day has an organized health service empowered to take cognizance of all matters inside or outside pertaining to the public health.

In our own country the U. S. Marine Hospital Service, organized originally to take care of sick seamen, was naturally called upon when danger threatened, as the only available resource to guard our shores against influx of disease from the outside.

It was soon realized that, as in morals, so in health, it was not so much "that which goeth in as that which cometh out that defileth a man"; and that the loss of life caused by great epidemics brought in from the outside, was small compared to the continued loss of life, caused by unwholesome modes of living, unclean houses, and unsanitary back yards and premises.

Hence the scope of the National Public Health Service has been broadened and its activities multiplied, until we now have, not a special department as we should have, but a bureau of health, with its seven divisions, covering in a comprehensive way every phase of investigative and administrative public health work. It is co-operating in a helpful way with the state health department, stimulating them to increased activities and supplementing their work when assistance is needed or called for.

So with the Tennessee State Board of Health which was established in 1877, at the urgent solicitation of a regular physician. (I came near saying an ordinary physician, but recall the fact that his services to our state stamps him as an extraordinary physician with a broad and far-reaching vision.) This first board of health was endowed with a multiplicity of duties, but no appropriation was made for carrying out these duties, not even enough for personal expenses.

Fortunately and providentially, it may be said, a great epidemic of yellow fever came to the rescue the very next year and

our legislative representatives were thereby reluctantly led to see that a board of health needed to be financed, and in 1879 the magnificent sum of three thousand dollars a year was appropriated, scarcely enough to take care of the expenses of the Board, the members of which must have served without pay.

Due in a large measure to the persistent educational campaign carried on by the medical profession, individually and through its various organizations, the appropriations for the support of this work have been gradually though very conservatively increased. Its powers and duties have been enlarged until we now have a State Department of Health, headed by a Commissioner of Health, appointed by the Governor. He is a member of the Governor's cabinet with prestige equal to any other member thereof. The department is now supported by an annual state appropriation of \$122,417.55, which amount is supplemented by other sums from the International Health Board and sundry other governmental and public welfare associations. It functions through eight divisions each with a separate head appointed by the Commissioner and confirmed by the Governor. It has an office force of twenty-four persons, eight of whom are regular M.D.'s. While the work of the department is still hampered somewhat by inadequate appropriations, it would seem that the most enthusiastic public health advocate should be gratified and satisfied at this half century's growth.

Important as is the work now being done by our National and State Boards of Health, there is another part of the service that is of more vital concern and of more far-reaching importance than either of these.

Many years ago the elder Dr. McCormack, of Kentucky, in a series of popular talks made through this state, pointed out that what Congress did affected the fortune of the average man very little; that the acts of the Legislature did not mean much, as a rule, to the people themselves; but that what most concerned them, their prosperity, comfort and health, was the man-

ner in which home affairs were administered by the county courts and local officials. So the local health boards and the conduct of home health matters constitute the most important part of the entire health administration.

In cities and in towns, where people are closely herded together, the increase in sickness and in deaths, caused by increased density of population, had long since forced people to recognize the danger clearly and to take steps to safeguard the public health. The rural section, with its widely scattered population, was considered immune and safe, and to the rural section the city resident was wont to hike for fresh air, pure water and health. The rural inhabitant himself, being obsessed with the same idea, resented any reflection on the sanitary condition of his community or his own premises, and considered sickness as a providential and unavoidable visitation.

In 1914, in response to suggestions from the country doctor, the United States Public Health Service begun a special study of rural sanitary conditions. Investigations were carried out in some of the average rural counties of the country, including one in our own state, and some rather surprising information was brought out.

It was shown that the average weight and height of children, boys and girls, of the rural schools was less than that of boys and girls of the same age in the city schools; that the number of uncorrected defects, congenital and acquired, found among the children of the rural schools was greater than in the cities. Typhoid fever, dysentery, diarrhea, the so-called filth disease, were far more prevalent in the country than in the cities and the number of cases of sickness and deaths from practically all preventable diseases exceeded that of the cities. These findings were further strikingly confirmed by the draft boards during our preparation for entrance into the World War and have awakened a wide interest in the question of more effective rural sanitation.

As a kind of makeshift, part time health officers have been tried out for a long time in England and have been widely adopted

throughout this country. In Tennessee provision for part time county health officers was made by legislative enactment in 1885. Everywhere, however, this has proven unsatisfactory and the present slogan of all health boards in which they are joined by civic bodies and public welfare societies is, "a whole time health officer for every county."

According to figures collected by Dr. Ferrell (3), there were in 1914 but three full time county health officers in the United States. In 1923 this number had grown to 241, of whom 120 were in the Southern states, though at that time there were nine states without any full time local health officers.

For the year ending June 30, 1925, an appropriation of \$74,310 was made by Congress "for special studies of, and demonstration work in, rural sanitation." Even this meager sum enabled the authorities to put on field projects in seventy-nine counties throughout nineteen of our states, nine-tenths of the sum required being furnished by state, county and various local bodies.

These demonstrations have proven highly satisfactory and have clearly shown that an efficient local health service can be maintained at a surprisingly small cost, and has resulted in the establishment of whole time health service in many rural counties throughout the country.

The first whole time county health officer acting under state supervision in Tennessee was appointed in Williamson County, October 1, 1921. Prior to that time one, and possibly more of the larger counties did have a full time health officer, but he was selected and functioned independently of the state health department. Other counties have followed and at the present time twelve counties and five cities are employing full time health men, a total of seventeen for the state. Williamson County has a complete health unit composed of the health officer, who is the director of the unit; two visiting nurses; a sanitary inspector and an office clerk and stenographer. It has proven a success from the beginning, and has the hearty co-operation and endorsement of the entire medical pro-

fession of the county. It has gained popular favor and is now financed in full out of public funds on a fifty-fifty basis between the county and the State Board of Health, and seems to have become an established institution of the county.

From all reports the same results have followed as a rule other like projects throughout the country. Adequate local health service, even in rural sections, is now considered an essential part of an efficient national and state health program.

Wherever this co-operative health work has been sufficiently tried out there has been a marked reduction in morbidity and mortality from preventable diseases and an improvement in health conditions along all lines. Its economic value and general usefulness is now being clearly recognized by business, civic and social organizations; these are joining with the medical profession in exploiting this work in demanding its retention and extension, together with more liberal appropriation for its support.

In contrast to the indifference of former days, popular interest in preventive medicine is now widespread and rapidly growing. An editorial in a recent issue of the *Journal of the American Medical Association* states that there is "a growing tendency in this country to consider health as one of the foremost objectives of education, taking its place with or even surmounting mental development and social progress." *Hygeia*, the journal of individual and community health, published by the American Medical Association, is meeting with gratifying popular reception. It is being adopted as a text-book on health in many of the public schools, is being widely read and quoted from by the general public, and is proving itself of great and sound educational value in matters of health.

The lay press newspapers and current magazines are giving wide publicity to the achievements of preventive medicine in recent years, and are advocating and urging a progressive campaign along all available public health lines. With this popular endorsement it is apparent that preventive medicine is on the threshold of rapidly in-

creasing development and usefulness.

What shall be the future relation between the profession as a whole and this most important branch? Does the ordinary physician, and the specialist as well, still entertain a helpful paternalistic interest in all efforts put forth to prevent disease? Or is there springing up a feeling that his special domain is being encroached upon and his income thereby lessened and is this feeling engendering a kind of antagonistic jealousy towards the whole health program?

Surely the profession cannot allow the fear of the loss of income or any other selfish motive to deter it from being loyal to the great principles embodied in the Hippocratic oath and the code of medical ethics.

Every true physician experiences a thrill of pride when, in battling with some disease, he feels that he has been of some help in saving a human life. He should feel still greater pride in helping to prevent that life being placed in jeopardy. There is indeed a joy unspeakable in seeing the progress of disease stayed, with color returning to faded cheeks and strength to wasted limbs. There should be still greater joy in beholding clean homes and better sanitary conditions in one's community with preventable diseases disappearing and death rates going down. However much we may glory in the achievement of curative medicine, we should obtain this greater satisfaction from the achievements of that branch of our profession which is really the perfection and the goal of medical science, namely, the prevention of disease.

Then, too, the situation is not one altogether of sacrifice. He who seeks first that kingdom of unselfish service never fails to have other things added to him, neither does he have to wait always nor often. I'm certain to believe for the next world to have them added. More and more are progressive, well informed people coming at stated intervals for thorough physical examinations; more and more are such diseases as tuberculosis, nephritis, heart lesions, etc., seen in their early stages when much can be done to cure or stay the progress thereof.

Defects, congenital or acquired, are no

longer allowed to go uncorrected, but are more and more frequently brought for advice and treatment. People who have been enlightened by a well conducted health campaign are more inclined to take all their ailments to the family doctor instead of wasting their hard-earned dollars on patent medicines and quack methods of treatment.

The prevention of the spread of disease from one member of a family to another, when disease has entered a home, the more prompt recovery of the sick one, resulting from intelligent precautions taken, and from better health conditions in the homes, often enable people in poor or moderate circumstances to pay the doctor for services rendered. Otherwise the expenses of prolonged and multiple sickness would have exhausted the family exchequer and discouraged them from even trying to pay.

The discouragement that comes from attempting to treat the sick with unwashed bodies, dirty clothing, on unclean beds and in rooms with stifling atmosphere, and in contrast the confidence and satisfaction that comes from the transformation wrought by the ministration of a competent visiting nurse can perhaps only be appreciated by the doctor who often encounters both situations.

From both an altruistic and selfish standpoint, then, it behooves the family doctor to lend every aid possible to the health administration of his community. If he declines to do this he ceases to be that influential factor which is his rightful heritage.

In return for this co-operation what should be the attitude of the health officer towards the general profession? In his last annual report the Surgeon-General of the United States states that the "purpose of all health work is the application of human knowledge in the care and restoration of the sick and the prevention of disease." It should be clearly recognized that the first of these, viz: "the care and restoration of the sick," belongs in no sense to the health official, but is the exclusive province of the general practitioner, fitted

by training and experience for this work.

It is perhaps not presuming too much to say that every sick person, no matter what his ailment, should be carefully checked over by his family physician before being turned over to any specialist.

"The application of human knowledge towards the prevention of disease" is a full time man's job, demanding all the energies and the resources of the health official, and it should be neither his privilege nor his duty to treat those already sick, not even charity patients. Any illness or defect discovered by these health boards in their work should be promptly referred to the family physician.

It behooves the health officer to extend to all the members of the profession within his territory every courtesy and consideration, for without their good will and support his work is almost certainly doomed to failure. To them he must look for prompt reports on prevalent illness, and by their endorsement and commendation only can he get in friendly touch with those whom he would serve.

Upon this influence largely depends his success in obtaining the necessary financial support as well as that popular favor and enthusiasm so helpful in his work.

In the interest then of both, the relation between the physician and the health officer (as well as that between general practitioner and all specialists of the profession), should be one of kindly, cordial, helpful co-operation and good will.

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DISCUSSION

DR. E. L. BISHOP, Nashville: It has been said, and I am speaking particularly to Dr. Howlett's paper, by well-known men of medicine that the most essential arm of preventive medicine is the practitioner himself. That is the view of the modern state department of health. It will be the basis of our departmental policy, for unless we can establish a partnership between preventive medicine, as carried out by the state department

of health, and the practitioner of medicine, we will fail in our job.

Dr. Howlett mentioned the possibility of the development of a feeling among practitioners in medicine that preventive medicine might trespass the field of practice. I do not believe that such a feeling exists where full-time county health departments are in operation. Certainly, we know of no such feeling in these areas, and if the time ever comes when it is necessary for health department practice to invade the field of general medicine practice, or if the state health department loses the confidence of the medical profession, then my resignation as Commissioner of Health goes in—I will feel that I have failed.

It might be apropos to this discussion to mention an element of the policy we are trying to develop in the state department. Take the matter of clinics as an illustration. Neither in county nor in departmental work have we established clinics to the extent that they have been established in other states. We have kept away from the curative side of the professional activity and expect to keep away from it. The exception to that is the stimulation of small venereal clinics which have been established in a few rural counties. Here, however, the governing policy is that no patient will be received except upon direct written reference from his family physician. That protects us from imposition, and protects the physician from encroachment on his legitimate field. This policy was first developed in Dr. Howlett's county, and there is no man better qualified to speak on the question of the physician and public health than Dr. Howlett, who has been conversant with full-time health work for five years. The health officers are instructed not to develop policies without consultation with medical advisers, to develop no clinics, and if clinics are necessary, they understand that the county medical society should assume this responsibility. It is the business of organized medicine to find the solution of the problem of treatment for patients who need treatment. It is our purpose to let that responsibility stay where it belongs. If they want to express that responsibility in action through the health department, then it is permissible for the health officers to act under instructions from the county medical society, and not under the instruction of the county or state health department.

I would like to emphasize that we are all doctors. I am a regular graduate of a regular medical school, a member of the American Medical Association and the State Society. We can understand each other and we can work together, for I think we do understand each other in Tennessee. One reason I am here is that on Monday a few full-time officers were gathered together to consider whether they should ask this Society to form a Public Health Section. The almost unanimous verdict was that they should not, because

they did not want to get that far away from the general body of doctors in the state. They want to know your problems, and they want you to know their problems. In that way comes friendship and understanding.

DR. A. F. RICHARDS, Sparta: Speaking to the point of overlapping or trespassing upon the rural sections by the county health officers, I want to say that this is wrong, for I have observed the situation in the past thirty-five years in country practice and we as physicians do not comprehend the situation exactly. We have not been able to show that line of demarcation between the practitioner of medicine and the public health officers. Public health does not trample upon the rights of the physicians of the state to practice medicine. It is the failure of our understanding of the situation. We know full well that the very basis of the practice of medicine or of medicine in the country that is referable to the state department of public health is that part which is not remunerative to the practicing physician. Furthermore, you all know, as I know, from absolute, hard experience that you as individual physicians in any county or state as a whole cannot, will not and never will take care of the public health question as physicians individually. Collectively we can. It is a question I formerly did not comprehend as I do now. I want to tell you that I learned it a few years ago from a study of this situation. For instance, take the prophylaxis against contagious diseases in the country. You as an individual come in contact with your local family. One man said this morning he proposed to take care of his own prophylaxis. That applies purely to his family. There are other individuals who do not feel that way and who feel that the prophylaxis can be taken care of by the department of health and not by the family physician. I should ask this question—why do the people of Tennessee have public health? Why do you people pay your taxes to educate the poor child? It is because it cannot be done individually and the state does it collectively. You have never thought once of dissenting from your public school system. So it is with every individual, so far as you come in contact and associate with the people of your community, you become subjected to their ills, to their shortcomings and to their faulty methods of living. He has the fly that poisons your house and you screen your house. Is the local doctor going to take care of that situation? No. The state department of health does not trespass upon the practice of medicine. You must live with and under the conditions that exist around you. You must decide whether you want your children to grow up with the ignorant children of the community or whether you want them to have an education. So it is with public health, and I think that is a very plausible illustration as it exists throughout our country. The relation of public health and

the doctor is such as exists between the carpenter and the tinner and workmen in general. There is a legitimate touch and a legitimate association and without that association and without that recognition, public health will fail and so will individual doctors fail to understand the indications and to control public health as an organization.

DR. W. K. SHEDDAN, Columbia: One of these papers I did not hear; Dr. Howlett was concluding his when I came in, and this is the second time I have heard Dr. Smith's. From Dr. Breeding I expected something, but Breeding, like a good many others, has fallen over into statistics.

Maury County, one of the richest and largest counties in the state, in 1877 had sixty-three active practicing physicians. Now it has thirty-two. Back only fifteen or twenty years ago we had two to four young men coming from that county every year to medical school, and then coming back and locating in the various sections of that county. In the last ten years everybody that has gone from that county to medical school has settled somewhere else. The average age of the thirty-two physicians in Maury County is well nigh fifty-five years. No young men are locating in the rural communities, and when the few old men there die I do not know what will happen. I must say that with this present system of medical education they would not be worth much if they were there. They spend four years looking through a microscope, they spend two years in a hospital and they know nothing in a practical way that fits them to come in daily contact with people in rural communities. It takes bigger men and men with bigger brains and more individuality to do a successful country practice than it does in any city in the world. He has to rely on his researches and on his own individual knowledge, and such men formerly went from the country. We go back thirty or forty years and the family doctor was the model of the community. The people looked up to him, they consulted him about everything, from finances to religion. What is the status of the physician today? How many of you are family physicians? How many of you have families you are treating through the second generation? I said the other night in the Nashville Academy of Medicine that I was the only family physician in Tennessee. I am taking care of the fifth generation. They come to you today and they go to someone else next week, and I do not blame them very much. You sent them to a modern machine-made specialist who is no better than a chiropractor. No man can be a specialist who has not had training back in the sticks in general medicine. Today my county, from an ethical standpoint may be far superior, but from a practical standpoint it is far from what it was forty years ago. Talk about standardization, I do not care how high they make the standards, but I do not believe a boy has to go some place and

spend \$20,000 to reach that standard. If he can graduate from a high school and go into your office, and after three or four years pass your standards, he should be licensed. I do not see why he has to go two years to a pre-medical school, then to a Class A medical school, then spend two years in a hospital before he can go out. He is, in other words, an old man who has spent twenty-five or thirty thousand dollars learning to be a doctor who expects to practice in a rural community.

DR. H. H. SHOULDERS, Nashville: Dr. Breeding's paper is the first attempt that has been made in Tennessee to analyze the situation. I think it is a very excellent analysis of the situation. It is, so far as I know, the one basis upon which the profession can come to an understanding of the situation. It is the only basis I know of upon which our people can arrive at an understanding of the situation. I have encountered the situation from a different angle from that which Dr. Breeding approached it, for I have been in a legislative way connected with the representatives of these rural people, who have failed to grasp the situation and who are blaming the profession of medicine for it. That is a condition of psychology and you cannot correct it with figures. It seems to me in the final analysis the whole question is economic. Last year I had occasion to analyze a few counties on the basis of taxes paid for education. Those taxes are collected by the state on the basis of property assessment. They are distributed for school purposes on the basis of school population. The state will collect \$3,000 from one of these rural counties for the purpose of education and they will spend \$12,000 or \$15,000 for education; in other words, that county did not maintain its own education. I analyzed the figures for many counties and the counties pay in a certain sum and the state department pays back to the county a much larger sum; in other words, the state is maintaining the schools of that county. All right, take the roads. They want to construct a road through a certain county, how is it done? Does the county pay? The county pays one-third, the state one-third and the federal government one-third. At the present cost of construction it would take a million dollars to construct one road across Overton County; in other words, that county does not maintain its own road system. It is the same proposition with the medical profession. It is an economic affair. What the solution is, I am not offering a suggestion. The very counties which have the smallest per cent of doctors do not finance their schools, their roads, their courts nor their churches. How can they finance an up-to-date medical service? Why should standards be lowered to meet their demands? Why should a doctor serve them at an economic loss to himself and family? I am not offering a solution. I will say that the solution is along economic lines.

DR. W. C. DIXON, Nashville: I was glad to hear Dr. Breeding stress the preservation of organized medicine and the need for organized medicine's assuming control of the movement for periodic health examination. I believe that offers to general practitioners a legitimate way of increasing their income. Primarily it offers an opportunity of doing a service to their clientele. I also believe it offers an opportunity to secure a place in medicine which rightfully belongs to them. To give the general practitioner the place in medicine which he should occupy will be of the greatest benefit to the profession and the public. It was on that basis that I made the recommendation which I am hopeful the House of Delegates will approve, that is, that we should officially adopt periodic health examination and have a full-time field secretary to foster the movement, and also adopt the institution of post-graduate courses so it will not disturb men's business too much to get away to postgraduate schools. Postgraduate schools naturally destroy the continuity of a man's practice by requiring him to go long distances to attend them. If they can be carried to him it would have a tremendous value. As to the periodic health examination, the future will bring to the public the value of it.

DR. W. S. FARMER, Nashville: I want to speak on one point brought out in Dr. Howlett's paper, about the statement he heard in Jackson last Monday. I was there and heard it. I was very much surprised at some of the rural counties finding more cases of syphilis than is often found in some of the cities. What does that mean? That means more insanity in that county in a few years. It means misery and sorrow for the various households unless the syphilis is cured. The prevention of insanity is largely in the hands of the health officers in the education of the public. Over ten per cent of all insanity is due to that one cause. It is nothing uncommon for me to get a husband and wife in our institution. I just want to call attention to that one point.

I was interested in all the papers. In my work, which is largely health work, I try to co-operate with the people. If I have a case of insanity due to syphilis in a man, I tell his wife the truth and I tell her to go back and have a Wassermann made on herself and on all the children. We have found that where there is a case of syphilis in a household every member of that family should have a Wassermann. We get full-time health officers all over our state to educate the people I believe you will see insanity decrease.

DR. K. S. HOWLETT, Franklin (closing his part of the discussion): The discussion seems to have revolved around the other two papers and not very much about my own. I simply want to state that my purpose in bringing this paper before this Society was to show you that the health movement had come to stay. Second, I want you

to keep in mind that the medical profession has been the primary factor in making this public health movement a permanency. Third, I wish to impress upon you that we have had a full-time health unit in our county for five years and that today it is making the practice of physicians in the country easier and more satisfactory in a great many ways than it was before. There are many advantages that we personally get from having a competent health officer that we need in country practice. Furthermore, I would say that I do not see any reason why there should ever be any friction between the general practitioner and the health official.

With regard to the other discussions, it seems that the other essayists spoke about there being an ample supply of rural physicians, and Dr. Sheddan took the very opposite view. Both took extreme views upon this question. I have noticed in medical literature for the past year or two a great many very kind things said about the old-fashioned family physician, the country doctor. I have noticed in the lay press a great many statements that lead one to believe the family physician is no longer needed. I want to protest against that. From my experience of forty-five years in the country and from my observation I want to say that there is still a very urgent demand for the family physician. I was very much gratified to hear the remarks made by the president in his address last night, that the family physician and general practitioner was the most important factor in medical progress, though the specialist also is most necessary. We do need a man who is acquainted with the family and with all their characteristics, who knows them physically, mentally, financially and spiritually. Any family that is deprived of the services that a general practitioner can render is in my opinion in a bad way.

DR. M. SMITH, Ardmore (closing his part of the discussion): Any doctor who has practiced out in the country in the last few years will know that what I have brought out in my paper is the truth. We do not need the doctors we used to. We do not have typhoid fever or dysentery like we used to. We do not have practically anything now that we used to have. It brings itself down to the point of what you are used to. If you are used to a lot of doctors, you expect them. If the time comes when young men can make a living out in the country there is going to be plenty of young men who will go out there. The reason the doctors are not in the country is that they cannot make a living like the other members of the profession.

DR. W. J. BREEDING, Nashville (closing his part of the discussion): I thank you very much for the very liberal discussion of this paper. That was the object of it, to get your views on this subject. However, I must differ from the views of my friend, Dr. Sheddan, who seemed to think that the statistics given could be made to falsify. I was taught in early life that figures do not lie. Figures are one of the most reliable means of establishing facts. It is true that they might be made to falsify by an improper motive, but I assure you my motive in making this investigation was to find the true facts, and if I have not found them it has been due to my inability to so find.

PERNICIOUS ANEMIA*

W. H. WITT, M.D., Nashville

TO present a paper on a disease of which neither the etiology, the prevention or the treatment is known, or, indeed, any nearer solution than when first identified, demands a word of defense. The defense is, (1) that it is some satisfaction to reach a diagnosis in any pathological state we may encounter, whether curable or not; (2) that a proper differentiation of pernicious anemia from secondary types of anemia that may simulate it very closely, is a highly desirable thing, leading as it does to rational treatment of the latter and, at least, to a sensible prognosis in the former. However hopeless a disease may be from the standpoint of prognosis, however baffling its treatment may be—it remains that our professional reputations are enhanced by accuracy in diagnosis.

In the matter of definition I shall say that I shall limit my remarks to the Addisonian anemia and have nothing to say about the so-called aplastic anemias or splenic anemias, both in a sense justifying the word pernicious—the former much more than the latter.

My real excuse for discussing pernicious anemia is that it is so commonly overlooked by the practitioner. I do not wish to be ungracious, or to ignore the fact that on a thousand points the general practitioner often puts the pure internist to shame, but it has been my experience that the great majority of cases of pernicious anemia that I have seen, whether in the city or in the country, had not been suspected to be such at the time. From conversation with others devoting themselves to internal medicine, I am forced to conclude that my experience is not unusual. And it is my wish to so group the facts about pernicious anemia as to lead to its

earlier diagnosis by the family doctor and not so often have it come as a consultation surprise. The great majority of physicians practicing medicine in Tennessee have limited facilities for laboratory tests. The result is that there is thrown on them a peculiar obligation to reach at least a suggestive diagnosis in a number of diseases whose definite classification rests on some more technical test. I hope to make it appear that in the great majority of cases of pernicious anemia a diagnosis can be tentatively arrived at by the old-fashioned processes of history taking, physical examination and a proper reasoning from the facts presented. It follows that I shall not dwell at any length on the purely laboratory side of the question, leaving that to any that may care to discuss it. The hospital or clinic physician that looks over the laboratory reports and finds a high color index of the blood, leukopenia, poikilo-cytosis, anisocytosis, gastric anacidity, negative stools, deserves no credit for making a diagnosis of pernicious anemia, but to arrive at the same diagnosis without those aids calls for those old-fashioned fundamentals which we must not neglect.

It would lead nowhere to discuss the various theories of etiology on this disease. They all appear to fall down under close scrutiny and such reasonable causes as pyorrhea or the hemolysis that may go on in the spleen are in a sense disproved by removal of those causes with no very marked alteration of the clinical course.

There are certain outstanding facts about pernicious anemia that should always be kept in mind by the investigator looking for a cause and that may yet lead to profitable discoveries. The most obtrusive phenomenon of this sort is the very common affection of the alimentary tract, especially the sore mouth and the diarrhea—but bacteriological studies under most favorable sur-

*Read before the Tennessee State Medical Association, Memphis, May 11, 12, 13, 1926.

roundings have not been fruitful of conclusions, though alimentary sepsis probably still has the larger number of adherents.

The practically universal absence of free hydrochloric acid in the stomach is another phenomenon that may yet lead in the right direction. So, too, the neurological features and the fact that it is a disease of middle and moderately advanced years carry with them certain intimations as to etiology. Its tendency to appear in certain families is another matter that may yet appear to have an etiological meaning. I have met with two families that had two cases each of pernicious anemia.

Now the symptoms of primary anemia are painfully numerous and attach to practically every system in the body, and their very multiplicity is confounding and disposed to lead nowhere, unless one is attracted by certain peculiar groupings which I hope to impress upon you.

The outstanding general symptoms are weakness, fatigability, shortness of breath and possibly loss of flesh, but the frequent retention of normal or nearly normal weight in spite of ready fatigue constitutes a feature of great importance.

The digestive tract symptoms are sore mouth, diarrhea, and in a fair proportion of cases dyspepsia—of no very constant type. Many cases have good digestion, even when there is sore mouth and diarrhea.

The neurological symptoms—often very important—are referable largely to the spinal cord and their presence is fully justified by post mortem findings in the longitudinal tracts, especially the posterior columns. These symptoms are mostly numbness and tingling—often very troublesome and worse generally in the legs than in the arms. It is rarely difficult, especially in those of more advanced years, to convince oneself of organic changes in the cord. These usually are similar to those of tabes or those of a spastic paraplegia—the outstanding signs depending on the location of most marked patches of sclerosis. Ataxia and other disturbances of gait are not infrequent. Even lightning pains are

reported, though I have not seen such a case.

We may be permitted to speak of a group of symptoms as cardiac, as here lies a very important pitfall in the matter of diagnosis. These symptoms are shortness of breath on exertion, palpitation and probably precordial discomfort on the subjective side, and the nearly constant presence of a murmur and some edema of the feet on the objective. To one a bit careless, or examining his patient in insufficient light, or eager to get away on a fishing trip, such a group of symptoms and signs might very easily justify the diagnosis of heart disease. On the other hand, in the presence of fever—quite common with this disease—one might pride himself on his diagnosis of a low grade endocarditis, and spend much effort in the attempt to give a positive blood culture.

I shall insert here the original description of pernicious anemia given by Addison many years ago and then return to a more detailed discussion of certain symptoms and signs that should suggest the diagnosis.

"It makes its approach in so slow and insidious a manner that the patient can hardly fix a date to the earliest feeling of that languor which is shortly to become so extreme. The countenance gets pale, the whites of the eyes become pearly, the general frame flabby rather than wasted, the pulse perhaps large, but remarkably soft and compressible, and occasionally with a slight jerk, especially under the slightest excitement. There is an increasing indisposition to exertion, with an uncomfortable feeling of faintness or breathlessness in attempting it; the heart is readily made to palpitate; the whole surface of the body presents a blanched, smooth and waxy appearance; the lips, gums and tongue seem bloodless, the flabbiness of the solids increases, the appetite fails, extreme languor and faintness supervenes, breathlessness and palpitations are produced by the most trifling exertion or emotion; some slight oedema is probably perceived about the ankles; the debility becomes extreme—the patient can no longer rise from bed; the

mind occasionally wanders; he falls into a prostrate and half torpid state, and at length expires; nevertheless, to the very last, and after a sickness of several months' duration, the bulkiness of the general frame and the amount of obesity often present a most striking contrast to the failure and exhaustion observable in every other respect."

It is interesting to observe that Addison failed to mention three symptoms that nowadays we lay so much stress upon—the lemon yellow tint to the skin, the digestive tract symptoms, and the periodic return to comparative health. Otherwise, we approve of Osler's remark that the description is masterful.

The patient with pernicious anemia comes to the doctor with a varied group of predominating symptoms. Probably a larger proportion merely complain of weakness—ready fatigue—and do not mention further symptoms voluntarily. They are tired and weak and do not know why. A good percentage will speak rather of shortness of breath, and it may be difficult to decide whether easy fatigue or shortness of breath is the chief feature. Many come for the diarrhea and a few come for the sore mouth. Occasionally one will come for relief for his troublesome paresthesiae—his numbness and tingling. Few of us have become so perfect in getting histories that we ask about practically every symptom man is subject to and it still remains true that some symptom or physical sign suggests a probable diagnosis and leads to questions on varied lines. This is particularly true of pernicious anemia. Progressive weakness alone may mean nothing, but progressive weakness with recurrent sore mouth, or with numbness and tingling go a long way to develop a hunch. Evident anemia means little, but anemia with no loss of flesh, or rather no loss of subcutaneous fat, is full of suggestion, and if the urine is normal or nearly so, inclines us strongly toward pernicious anemia. It is quite true that a cardiac murmur with fever and moderate apparent anemia is very suggestive of endocarditis—but if such a patient has had sore mouth, diarrhea, numbness and

tingling—or gives a history of a similar state some months back from which he recovered—pernicious anemia is a good guess.

If a patient has a puffy pallor, some albumin in his urine, nephritis may be suggested, but if the pallor is of the lemon yellow type and the blood pressure low, the picture becomes different and blood study is demanded. Renal function has been found low in some cases of pernicious anemia, further suggesting the wrong diagnosis.

If a patient comes with numbness and tingling or with more definite signs and symptoms of a combined sclerosis of the cord—either with the ataxic or spastic features predominating, and yet the general picture not look right for pure spinal cord disease—we must see what the blood and the gastric content show. So the pellagra hunter might very easily put down a sore mouth and diarrhea—especially if there were some spinal cord symptoms, as due to pellagra. And, indeed, the two diseases may not be distinguished at times. I followed one case for two or three years without being able to assure myself of the diagnosis. I learned later that the patient was in a hospital for the insane in Alabama with all the symptoms—physical and mental—of a pellagrin.

The gastric symptoms are at times the chief complaint; not only flatulence, loss of appetite, epigastric discomfort, but even pain. Just a year ago a man of sixty-five consulted me for gastric symptoms in which pain was a feature. His illness had begun about five months before. He had lost flesh, color and strength. He did not present the common appearance of pernicious anemia. X-ray studies were negative and his blood was typical. Further questioning brought out spinal cord and the other symptoms that confirmed the diagnosis.

The stomatitis and the diarrhea are often not such as to strongly suggest pernicious anemia. They may be present early—in fact, years before the blood picture is much altered. The tongue is apt to present more pathology than other parts of the mouth. Unaccountable remissions of these symptoms should suggest pernicious anemia, and if there is no free hydrochloric acid and

cord symptoms are present, the suggestion is strengthened, no matter if the blood picture is not confirmatory. By the time the papillae of the tongue have atrophied and that organ has become smooth and glazed, the diagnosis is confirmed by blood analysis.

Periodic improvement, constituting the so-called remission, is a nearly constant feature of the disease, though a few decline steadily from the first, with no periods of improvement. Two or more remissions are common, and the patient may become free of symptoms and the blood may return to near normal. It is well to remember that symptoms due to spinal cord changes persist, though the blood picture may return to normal. A diagnosis at such a time may be very difficult, but a careful history and an absence of free hydrochloric acid would at least suggest pernicious anemia. In a remission the improvement may be unaccountably rapid, as in the later relapses, at least, the decline is rapid, and even blood transfusion will not check the rapid destruction of red cells.

Enough has been said to refresh your minds on the varied grouping of symptoms that suggest pernicious anemia and demand further study by laboratory methods.

Is there anything in the physical appearance of a case of primary anemia to suggest the diagnosis? You hear it said that the lemon yellow color is not to be depended on; that it may be absent, or it may be present and be due to cancer or some other disease. My experience is rather at variance with this. I should say that two-thirds of the cases I have seen have betrayed the diagnosis in the face. The conjunctiva as well as the skin has a yellowish tint, the subcutaneous fat is retained usually, the lips and throat pale unless a stomatitis is present, the skin is soft; a grouping of signs hardly suggestive of anything else, even nephritis. It is well to remember that there may be a definite icteroid tint to the sclera and the skin, the result of blood destruction. A man of sixty was referred to one of our surgeons for gall bladder operation on account of troublesome gastric symptoms and slight jaundice. A little

more questioning into his range of symptoms, followed by an examination of his blood, established the fact that he had pernicious anemia.

A purely accidental appearance of symptoms was misleading in one case. A man of sixty-two developed an influenza in January. He continued to cough through February and March and had some fever. Though his sputum was negative, it was feared he had tuberculosis. His appearance was practically typical of pernicious anemia, and careful questioning brought out the fact that for six months he had been easily fatigued and had lost color but no flesh. His stools were negative and his blood gave a typical picture of Addison's anemia.

In case a diagnosis of pernicious anemia is tentatively made, can the physician with limited laboratory facilities confirm his suspicion without sending his patient for study of his blood? The latter is highly desirable, as is the study of the feces for parasites, to assure that he is not dealing with an anemia secondary to intestinal infestation, or probably x-ray examination to exclude gastric carcinoma, in both of which the blood picture may, in rare instances, simulate a primary anemia. Any one can test for free hydrochloric acid. If absent, it adds another link in the chain of evidence. Also a blood smear may be sent for examination. Much may be learned from a blood smear. While any extreme anemia may show misshaped and unequal cells, the blood of pernicious anemia is much more apt to show an average increase in size of cells and also the nucleated reds—the latter giving evidence of pressing effort on the part of the bone marrow to replace the destroyed red cell. In the smear it is also noted that the white cells are probably less than normal in number. These two tests, gastric analysis and smear examination, may be very helpful and, in fact, final if the patient happens to be in such condition that he may not visit the laboratory.

I do not wish to make it appear that the diagnosis of pernicious anemia is always easy if the blood is tested and found belonging to that type. But I do think confusion

is not to be expected if proper study is made, except rarely. It is true that carcinoma, malaria, chronic hemorrhage, intestinal parasites and even arterio sclerosis and syphilis may create difficulty, but the closer the blood picture is studied the less the chance of error. In rare cases some of these conditions may coexist with pernicious anemia.

By way of summary let me repeat that among people past middle life the following symptoms should suggest pernicious anemia:

(1) Gradual loss of strength and color with little loss of weight.

(2) Persistent numbness and tingling, especially of the lower extremities.

(3) Unaccountable recurrent sore mouth and diarrhea.

(4) A lemon yellow tint to skin and sclera with good retention of subcutaneous fat.

(5) A systolic murmur with slight chronic fever in an ambulatory patient.

These symptoms and signs only suggest the diagnosis, but in a great many cases the blood picture will confirm the suspicion.

DISCUSSION

DR. LYLE MOTLEY, Dyersburg: Dr. Witt has left very little or nothing to be said on the subject of pernicious anemia.

He stated in his opening remarks that his discussion would be confined purely to the clinical side, but it seems he has also very well covered the laboratory side. However, the clinical side is really the most important side. The clinical feature is what draws the attention of the average practitioner to the fact that the patient may have pernicious anemia.

However, there is no clinical feature or group of features in pernicious anemia that cannot be simulated or duplicated by other conditions.

Also there is no single set of laboratory findings that cannot be simulated or duplicated by other conditions.

It is one disease where the clinic features and laboratory findings are practically of equal value since clinically the various features of the anemia, the peculiar lemon-yellow pallor, the weakness, the dyspnea and even the combined degeneration of the cord can be produced by other conditions with chronic anemia. For instance, carcinoma and chronic bleeding from various sources can produce the clinical features to a certain extent, but

not the typical, well-marked advanced case.

On the other hand, the laboratory features almost pathognomonic of it, the mahogany-colored urine, the absence of free hydrochloric acid, and the blood changes—all these symptoms can be produced by other infections.

Therefore, while the clinician is the man to recognize pernicious anemia, he should withhold his diagnosis until the laboratory confirms it. And the laboratory examination is purely confirmatory. The diagnosis of pernicious anemia is not, contrary to the ideas of a lot of men, made on the blood findings. It is impossible to make a diagnosis on blood findings alone. While this may be confirmatory of pernicious anemia, the laboratory does not make the diagnosis. In fact, there is nothing pathognomonic of pernicious anemia.

Dr. Wood has drawn attention to the close relationship of so-called tropical sprue and pernicious anemia. Every clinical and laboratory feature of pernicious anemia he says he has found in tropical sprue. He has put fifteen years study on it, and as a result he has recently made a statement at the Southern Medical Association that he was in a position where he could not tell where sprue left off and pernicious anemia began.

Also Castellani, of New Orleans, has recently isolated the monilia psilosis from tongue scrapings in cases of undoubted pernicious anemia, that is, as far as it can be undoubted. The cases were diagnosed by very competent clinicians and confirmed by competent workers, and then Castellani isolated typical monilia from the feces and the tongue scrapings. Of course there is some doubt there about diagnosis.

I have always entertained the idea from observation and reading that pernicious anemia was an infection. There is no need for me to go into the reason why I consider it an infection, and the idea is of course not original with me. All the symptoms point to a chronic infection with severe toxemia.

The symptoms of the combined degenerative sclerosis of the anterior and posterior columns precede by months and even by years the onset of the anemia.

If there can be an etiological relationship established between sprue and pernicious anemia it would clear a lot of our problems. Unfortunately, we are not able to do much more with sprue than with pernicious anemia. However, a discovery of the cause is a foreboding of the discovery of the cure.

While pernicious anemia is practically a hopeless case and only offers a delightful study for the hematologist and clinician because the curative treatment is practically nil, it is a very important disease to diagnose absolutely, because the conditions which simulate it are nearly always curable with the exception, of course, of malignancy.

DR. CARL C. CRUTCHFIELD, Nashville: I

have seen a fair number of cases. Dr. Witt very thoroughly told you about the types of pernicious anemia, but he did not dwell upon those borderline cases that at times are so hard to differentiate from other conditions.

Dr. Motley mentioned sprue, which in advanced stages is at times pretty difficult to be distinguished from pernicious anemia and at times impossible.

I would like to also call attention to the fact that at times malignancies of particular types are very difficult to differentiate from pernicious anemia.

I know of one case especially that came in with a diagnosis of pernicious anemia with a fairly characteristic blood picture, with an anemia of about thirty and practically all the symptoms of pernicious anemia, except the cord changes. In going over the case and making a physical examination we found that he had some symptoms referable to his stomach. On x-ray of his stomach we found that he had a large inoperable carcinoma of the stomach. It was obvious he could not be benefited by blood transfusion.

Another case I remember that was diagnosed as pernicious anemia, and we never knew whether it was or not, was a case of carcinoma of the uterus that I treated with radium. She got a cure as far as local manifestations were concerned. That patient developed a condition at the end of about three years that could not be differentiated in any way from pernicious anemia. She responded very nicely to blood transfusion temporarily for about a year, and then she died, like so many other cases of pernicious anemia.

I would like to call attention to the fact that the differential diagnosis is very difficult, and we should not diagnose pernicious anemia until all other factors have been ruled out.

As to the cause, so many of them do have intestinal parasites, and so many have bad teeth, that it is almost a universal practice to find one or the other existing in the patient. We are very prone to attribute the cause of their anemia to these factors.

One other thing I would like to mention is that a good many of these patients can be helped medically by giving free hydrochloric acid. If it is an infectious thing, a deficient condition, the blood transfusion will certainly prolong the patient's life longer than any other one method.

DR. G. P. JONES, Memphis: I did not expect to hear such a beautiful description of the clinical conditions. I have some cases that I would love so much to show to Dr. Witt which are the result, as I find it, of intestinal parasites. Especially present in those cases of virulent flagellate infections.

I want the doctor to answer the question if he has examined any of these cases which he has described carefully after a thorough saline purge, with a warm stage, a warm slide, a warm cover slide, and if he has found flagellate infections.

I rise for the reason, gentlemen, that I have observed the picture as beautifully described by Dr. Witt as I could possibly describe it myself, in these cases, save, if you please, I have not noticed the lemon color of the skin that he describes.

Gentlemen, the dawn of knowledge is scarcely opened as to the results of intestinal infections, and add, if you please, to your flagellate infections, your infections of the mouth, pyorrhea, and you get excoriation and toxicity resulting from this excoriation and absorption from that intestinal area over a large extent of the intestinal tract.

Gentlemen, I am very much interested in this. I did not dream that I would hear something that is so beautifully descriptive of a case such as I encounter quite frequently, namely, intense flagellate infection. This includes also the spinal cord lesions.

DR. LUCIUS E. BURCH, Nashville: I have enjoyed Dr. Witt's paper immensely.

I desire to report rather an interesting and unusual case of pernicious anaemia, which was on my service in the old Vanderbilt Hospital fifteen years ago.

I performed an appendicostomy and through this opening placed a rubber catheter in the cecum. The bowels were then irrigated daily with normal saline solution. The patient immediately took on flesh, the blood went up to normal and he appeared to be perfectly well.

He was kept in the hospital a little over two years for observation. Unfortunately he developed pneumonia and died.

This case was reported by me in a paper before the Southern Surgical Association and was afterwards printed in the A. M. A. journal.

It may be that intestinal parasites play a great part in the causation of pernicious anaemia.

DR. C. F. ANDERSON, Nashville: I wish to call attention to just one symptom or set of symptoms that Dr. Witt did not speak of in his paper. These are the bladder symptoms. They are of course secondary symptoms, and secondary to the cord lesions. I believe that they should be taken into consideration because of the fact that it might be entirely possible for one of these patients to present himself to a urologist without a diagnosis of pernicious anaemia. I believe we ought to keep this before us so that we might be able to make a diagnosis or look further into his case and not consider it primarily urological.

I am not quite prepared to say that I feel like I can make a diagnosis of this type of cord lesion from the appearance of the bladder. However, we do feel that we can make a diagnosis of cord lesions especially in tabetic lesions from the appearance of the bladder.

I believe this particular disease presents still another picture in the bladder that I think probably I might recognize. I have had the pleasure

of seeing four cases in consultation and cystoscopy these patients. They have very much the same picture of ordinary cord lesions we get with locomotor ataxia except the extreme paleness of the bladder.

I believe that this symptom and these bladder symptoms should always be taken into account in this condition and do not feel that a discussion like this should be closed without mentioning the bladder symptoms.

DR. W. W. WITT, Nashville (Closing): With reference to intestinal infestation all I can say is that the patients I have seen have all had examination for amebae on warm slides, examination for hook worm and other ordinary parasites that seem to produce marked anaemia.

I have not been particularly impressed with the pathogenicity of flagellates. I have an open mind in reference to that matter. People who have looked into it thoroughly have different views as to pathological changes and symptoms produced by them. I don't know that I have a definite opinion except a vague leaning toward the fact that flagellates are not particularly pathogenic.

Where pernicious anaemia has been studied with special reference to the intestinal infection I think we can say definitely that no conclusion has been drawn that any of the ordinary parasites are the cause of pernicious anemia.

There are parasitic conditions that can produce an extreme anemia that will give you a picture very much that of pernicious anemia. But Cabot, for instance, is particularly of the opinion that the more the blood studies are prolonged in case of other conditions like carcinoma, syphilis and all those things, the more nearly one comes to the conclusion that you have differences between them and the blood finding in pernicious anemia.

Now, I dwell purposely on the ordinary clinical

side for the reason I gave, which is that it has been my experience that ordinary studies from the symptoms and experiences of the patient have failed to suggest to the doctor that he is dealing with pernicious anemia.

When we speak of pernicious anemia we ought to have in mind all the clinical pictures, the remissions, the appearance of the patient, stomatitis, pyorrhea, spinal cord symptoms and all those things that constitute the clinical behavior of an ordinary case.

While some of these may be simulated by other types of anemia, none of them have those ups and downs and finally the last down and out so characteristic of the disease under discussion.

I am a pretty thorough believer that pernicious anemia is different from the other anemias that have been studied. It may be an intestinal infection of some kind. I am not disposed to think that it is due to any of the ordinary large parasites with which we are familiar. I am glad Dr. Anderson referred to the spinal cord features especially because it will happen once in awhile that cases will come with intense spinal cord symptoms that are due to the progressive sclerosis that go with pernicious anemia and will be found in a period of remission in which there is nothing to suggest what the disease is.

If you will go back and get the history you are very apt to bring out the period of remissions and stomatitis and pyorrhea and establish the fact that the patient has pernicious anemia.

It is almost fair to say that they all die. I have seen one patient that I think has completely recovered from pernicious anemia. I saw this man once when it did not look as though he could possibly live through the night. He presented a typical picture, lemon yellow skin, short of breath. He began to improve. He had many ups and downs. He is living today in very good health indeed.

TULAREMIA IN TENNESSEE*

S. F. STRAIN, B.S., M.D., Memphis

SINCE the discovery of the disease only a few years ago, tularemia has been found in twenty-two or more states from the Atlantic to the Pacific. Hitherto no human case has ever been reported from Tennessee, though rabbits shipped from Greenville have been found by the hygienic laboratories to be infected. It is our opinion that the disease is more prevalent than is generally supposed. In my own limited experience I have had the privilege of observing nine cases in Memphis, and I feel that the attention of the profession should be called to this serious disease, which is probably rapidly spreading throughout the country.

Definition. Tularemia is a specific, infectious disease occurring in nature as a fatal bacteremia in certain rodents (especially rabbits) and transmissible to man by the bite of a blood-sucking insect or tick, or by the handling of infected rodents, as in the case of market men, cooks, hunters and laboratory workers.

History. In 1911, while studying plague in the ground squirrels in Tulare County, California, McCoy discovered a "plague-like" disease which he described and which with Chapin, in 1912, he demonstrated to be due to an organism called by them bacterium tularense. While several cases of a disease, which without doubt must have been tularemia, were reported by Pearse in Northwest Medicine in 1911, the first human case to receive bacteriological confirmation was a case in the ophthalmologic practice of Vail, in Cincinnati, in 1913. This case was studied by Lamb and Wherry and their work revealed the fact that the organism was identical with that described by McCoy and Chapin. Surgeon Edward Francis, of the U. S. Public Health Service, first used the name tularemia in 1921, and

since that time has done a great deal to add to our knowledge of this condition. Until recently tularemia seemed to be confined to the United States of America, but Francis has shown that O'Hara's disease, which was recently discovered in Japan, is identical with it. Tularemia is the only disease that has been described and elucidated entirely by American investigators.

ETIOLOGY

Bacterium tularense is a small, non-motile, gram negative cocco-bacillus, from 0.3 to 0.7 micra long, and gives the appearance of being surrounded by a capsular material in stained smears from the tissues. The organism stains best in tissue preparations with giemsa solution, but in smears it takes anilin gentian violet readily. It will not grow on plain agar or in bouillon, and until recently has been cultivated chiefly on coagulated hen's egg yolk. Francis has devised several media on which the organism can be grown, but the most satisfactory one is serum glucose cystine agar. The organism is rarely found in exudate from the suppurating lesions, but it is abundant in livers and spleens of animals dying from the disease.

It has been found possible to transmit tularemia from animal to animal by the bite of a number of blood-sucking animal parasites, e. g., the rabbit louse, the deer fly, the common bedbug, the squirrel flea, the stable fly (*Stomoxys calcitrans*) and the wood tick (*Dermacentor andersoni*). Transmission from rabbit to rabbit in nature is by the rabbit tick, *Haemophysalis leporpalustris*, and by the rabbit louse, *Haemodipus ventricosus*. Neither of these bite man, but they transfer the infection throughout the year and perennially from rabbit to rabbit. These animals constitute a great reservoir of infection and afford the necessary condition for ready transfer to man by blood-sucking insects and ticks.

*Read before the Tennessee State Medical Association, Memphis, May 11, 12, 13, 1926.

Because of the susceptibility of the gray mouse (*mus musculus*), Lamb predicts that bacterium *tularensis* may some day take its place along with *bacillus pestis* as a menace to man.

Transmission to man is by the blood-sucking fly, *Chrysops discalis* (deer fly), and the wood tick, *Dermacentor andersoni*. These pests are more common in the western part of the United States and are perhaps the principal means of infection in that region. So far as I have been able to ascertain there is no case reported where the disease was spread from man to man by direct contact or by the bite of an insect. Harris reports a case of a mother contracting the disease by pricking her finger with a safety pin while dressing an ulcer and an open gland on the neck of her son.

As in all our cases the disease is readily contracted by those handling infected rodents. This applies to cooks, market men, hunters and laboratory workers. The portal of entry can usually be found. Recent experiments at the hygienic laboratories would indicate that infection is possible from eating poorly cooked infected rabbit.

SYMPTOMATOLOGY

As tularemia affects man it is more conveniently described in two types: (1) the glandular type, which is by far the most common, and (2) the typhoid type, as Francis has termed it.

THE GLANDULAR TYPE

After a period of incubation varying from two to ten days with an average of about five days, there appears at the site of the insect or tick bite or a broken place in the skin, a necrotic, punched out, sluggish ulcer, discharging a yellowish, purulent material, and showing very little tendency to heal. There may or may not be a lymphangitis present, but there is a prompt enlargement of the regional lymph glands. This enlargement is painful and tender and may reach considerable size, either subsiding slowly after two to four months, or breaking down, discharging a whitish purulent material. In some of our cases this resembled pus from a tuberculous sinus. In

the majority of cases, perhaps, the glands break down and suppurate.

At about the time of the appearance of the initial lesion the patient is seized by a generalized aching, a feeling of weakness, chill and an elevation of temperature. An abrupt onset with profound prostration is the rule. The temperature may reach 104 degrees or higher and the patient is forced to go to bed with an acute febrile illness lasting from three to six weeks or longer, with a prolonged period of convalescence, the weakness lasting sometimes as long as six months or even a year. The temperature throughout the febrile period is usually continuous, falling by lysis. The pulse is correspondingly accelerated. A striking symptom as noticed in most of our cases is the profuse sweating that takes place throughout the illness, sometimes even after the temperature has subsided. A slight cough is common, and the sputum may contain the organism. Pneumonia occurred in one of our cases.

THE TYPHOID TYPE

The symptoms and course in this type are the same as those of the glandular type, with the exception that there is no glandular enlargement. Infection is acquired by the handling of infected rodents, the portal of entry being uncertain. It has been suggested that because of the high cystine content of the skin that the organism may be capable of thriving on the skin and pass through it without producing an initial lesion. Respiratory infection is also a possibility. Practically all of the cases of the typhoid type hitherto reported have been in laboratory workers. Ours is the first case reported in a market man.

DIAGNOSIS

Examination of the exudate by ordinary methods yields negative results. Blood counts reveal as a rule an increase in the total number of leukocytes with little or no relative increase in the polymorphonuclears. The urine may show a small amount of albumin. Blood cultures are usually negative, though the organism has been isolated from the blood stream in two human cases by Francis.

Inoculation of guinea pigs with exudate from a lesion or with blood taken from the patient's vein usually results in infection of the animal, to which it succumbs in from five to nine days. Necropsy reveals the characteristic lesions in the liver and spleen and the organism can be found in abundance in these organs. This method of diagnosis is exceedingly dangerous, as most laboratory workers who have studied tularemia have contracted the disease from handling the infected laboratory animals.

The complement fixation test with a specific antigen gives positive results, but it is much more difficult and expensive and at the same time no more reliable than the agglutination test. This is by far the best means of laboratory diagnosis. An antigen is made from a suspension of bacterium *tularensis* culture heated for thirty minutes at fifty-six degrees C. and preserved with 0.3 per cent tricresol. Serum from positive cases agglutinate the organisms thus treated in dilutions as high as 1:1280 and above. The test is specific.

As might be supposed the glandular type may be mistaken for glanders, anthrax or a septic infection and the typhoid type must be differentiated from typhoid, malaria, influenza or, as in our case, from acute general miliary tuberculosis. The specific tests for these various diseases serve to differentiate them, but where there is a history of handling rabbits in any capacity, or of having been bitten by a blood-sucking fly at the site of the initial lesion, tularemia should be thought of and appropriate tests should be made to rule it out.

PROGNOSIS

Death from tularemia is uncommon in the cases reported, but several fatal cases have been observed. It is probable that there are many deaths ascribed to typhoid fever or sepsis which may have been due to tularemia. The disease, however, is sometimes a very severe one and the prolonged course of the illness makes it an important one from an economic standpoint. It is a disease the spread of which would mean a great economic loss to the country.

IMMUNITY

The only instance of a second attack was reported in a laboratory worker who was performing autopsies daily on laboratory animals in the hygienic laboratories, Washington, D. C. The second attack developed two years and five months after the first and was very mild. The fact that agglutinins persist in the blood of recovered patients for several years would indicate that one attack produces a degree of immunity.

TREATMENT

The treatment is symptomatic. So far, no specific drug has been found nor serum perfected. Our glandular cases were treated in the usual way for infected wounds. The glands were opened only after they were obviously breaking down. Earlier incision is not considered advisable. Shelton used quinine in the treatment of one case and thinks this may be of value. Rest in bed during the febrile period seems most important.

The time allotted will not permit me to report in detail all our cases, but we would like to present some of the essential points in some of them.

Case 1. J. B., white, male, 37, meat cutter, handled rabbits from the opening of the season. Period of incubation was not determined. The primary lesion was on right index finger and the right axillary glands were involved. The onset of symptoms was November 9, 1925, and the acute febrile period lasted three weeks. In spite of the sore finger the case resembled typhoid so much that it was treated as such, the correct diagnosis being made after recovery. Patient was unable to return to work for six weeks after onset of illness. Serum taken January 10, 1926, agglutinated. Bacterium *tularensis* in all dilutions from 1:10 to 1:320.

Case 2. Mrs. C. R. W., white, female, 28, housewife, stuck a rabbit bone in her right thumb November 30, 1925. On December 5, 1925, she was suddenly seized with an acute illness and ran a typical febrile course for two weeks, the primary lesion healing very slowly. The right axillary glands were involved but did not suppurate. Serum taken January 1, 1926, was positive in all dilutions from 1:10 to 1:320.

Case 3. L. F., white, male, 28, meat cutter, scratched right thumb on rabbit bone on November 24, 1925. On November 29, 1925, acute onset occurred and the acute febrile period lasted for four weeks with weakness lasting for two or three weeks longer. In addition to the initial lesion on the right thumb some scratches on his left became infected and more or less typical lesions resulted. Axillary glands on both sides, those on the left suppurating, discharging for several weeks. Serum taken January 3, 1926, was

positive in all dilutions from 1:10 to 1:1280.

Case 4. G. H., female, colored, 30, cook in restaurant, became acutely ill November 25, 1925. She was handling rabbits regularly so date of infection was not ascertained. The primary lesion was on the left thumb, left epitrochlear and left axillary glands were enlarged, both suppurating. Illness lasted for six or eight weeks, prostration being marked during the acute febrile period. Blood taken January 9, 1926, was positive in all dilutions from 1:10 to 1:320.

Case 5. E. M., white, female, housewife, 45, while cleaning a rabbit December 24, 1925, stuck a bone in right index finger. December 26 she became acutely ill and ran a typical course of tularemia infection. The primary sore healed very slowly, the right axillary and cervical glands became involved and suppurated, discharging for several weeks. This case had been under treatment for chronic fibroid tuberculosis and at first the condition was thought to be a flare-up of tuberculous activity. The tuberculosis had surprisingly little influence on the course of the disease. Blood taken January 10, 1926, was positive in all dilutions up to 1:160.

Case 6. J. W. A., male, white, meat salesman, injured left hand while handling rabbits on November 14, 1925. On November 16, 1925, he became acutely ill, the acute febrile period lasting three weeks, with the usual prolonged weakness following. The lesion was rather small, healing without a scar, and the axillary glands subsided slowly without suppuration. He was given .6 gm. of nearsphenamine on November 20, 1925, with apparently no effect on the course. This was given by his physician because of the finding of Vincent's organisms in his sputum. Serum taken March 7, 1926, was positive in all dilutions up to 1:320.

Case 7. Mrs. R. D., female, white, 50, housewife, from Manila, Arkansas, injured right thumb while dressing a rabbit on December 15, 1925. On December 24, 1925, she became acutely ill and febrile period lasted for about two weeks, weakness and malaise continuing four weeks longer. The primary lesion was on right thumb; the right axillary glands were involved, subsiding without suppuration. Blood taken January 5, 1926, was positive in all dilutions up to 1:640.

Case 8. Mrs. E. W. B., white, female, 30, housewife, injured right index finger and left thumb while dressing a rabbit on December 10, 1925. On December 13, 1925, acute symptoms developed and she was ill for three or four weeks. The axillary glands on both sides became involved but did not suppurate. Serum taken January 24, 1926, was positive in all dilutions up to 1:640.

Case 9. F. B., white, male, 23, meat cutter, became acutely ill October 24, 1925, and was admitted to the General Hospital. Here he was at first thought to have typhoid fever, then military tuberculosis, because of negative laboratory findings for typhoid and because of the reporting of finding of the acid fast bacillus in the spinal fluid. He also developed a consolidation in his right upper lobe. Tularemia was thought of only when he began to recover and when it was learned that he had been working with case number 6. During the acute stage he was extremely ill, and delirium lasted for a number of days. On admission no primary lesion was found and there was never any adenopathy. We considered this a typical case of the typhoid type. Serum taken January 1, 1926, was positive in all dilutions up to 1:640.

SUMMARY

Tularemia is being reported from nearly every section of the country and is probably more common than generally supposed. It is a rather severe illness, the mortality of which is probably higher than reports would indicate. Nine cases have been seen by us in Memphis with no fatalities.

The writer wishes to acknowledge his obligation to Drs. J. J. Cullings and H. G. Rudner for allowing him to observe the cases seen by them and to Surgeon Edward Francis, of the hygienic laboratories, for his co-operation in giving information and in making the agglutination tests.

DISCUSSION

DR. H. G. RUDNER, (Memphis): As Dr. Strain covered the field of tularemia so wonderfully, it would be best to pass that on and go on to the clinical side we have to contend with.

In the Northwest quite frequently they have had what they called rabbit ulcers, which was tularemia. I guess in the western states they had these ulcers but they didn't know at that time they were dealing with tularemia. But they know these men were unable to work for months after they had these ulcers.

I think the first case we had was a case we reported to the Board of Health as clinical typhoid. In spite of negative results, the name was clinical typhoid. But there was a hitch to it.

He had a pinched expression. He had a blanched face. He ran a mild typhoid type of temperature and had a lot of gastro-intestinal symptoms.

We reported him to the Board of Health as clinical typhoid. He went through a typhoid course and the temperature became normal. We passed him up.

This man, by the way, was a butcher in the same vicinity where the other two cases developed.

The next case was Mr. F. He was diagnosed early by a physician as influenza. He was treated for influenza for about ten days. I saw him with an adenopathy. He looked sick. He had a pinched expression, the gray hue, running a septic temperature. He had streaks up his arm, a great big bunch of glands. He had an infection in both hands, with great big glands in both axillae and running a septic temperature.

The thing that struck us was the fact that he had a leukocytosis around 15,000 with a predominance of large mononuclears. That was peculiar. We attempted anti-strep serum on this man.

Then the next case was the lady who had a

little infection of the finger, who simulated influenza.

Then we got busy. Things looked peculiar. Dr. Strain and I discussed it. He thought possibly this would be tularemia. We looked up the literature, and it fitted that literature quite well. We sent to the Hygienic Laboratories and got a positive, and then went back to Mr. F. and we got a positive on him.

Then we realized that the man we thought had typhoid might have it. He had a small ulcer on his finger. All butchers have bandaged hands, and we passed up his bandaged hands. We went back and got his type and sent it to the laboratories and got a positive.

The course of each case was typical of tularemia. The one that simulated typhoid complained of weakness, lack of initiative in his work, laid around the house at least eight weeks. The one with the double glandular involvement was incapacitated for about three months. The lady with the small abrasion on the finger was incapacitated for two or three months.

Now, the tuberculosis case was quite interesting. This woman, who had developed on two occasions pneumonia, a bronchial pneumonia associated with tuberculosis, had developed it again. We figured that it must have been a routine affair with her.

DR. WILLIAM LITTERER (Nashville): This is certainly a valuable and important contribution. Undoubtedly tularemia exists throughout the entire states of our country unrecognized.

In 1911 McCoy first isolated the bacillus tularensis in California from ground squirrels suffering with a plague-like disease.

The first human case was reported in 1913 by Wherry & Lamb, of Cincinnati, in a meat cutter by handling rabbits. Rabbits were dying just across the Ohio River in Kentucky in large numbers, presumably from tularemia. They traced the infection directly from that source. The human being is exceedingly susceptible. Laboratory workers working with this micro-organism sooner or later become infected. There have been seventeen cases of tularemia in laboratory workers. The Hygienic Laboratories have had six men to contract the disease. In all the seventeen cases the infection gained entrance to the body without leaving the slightest evidence of a local lesion or without causing glandular enlargement of any consequence. The clinical picture was more like that of typhoid fever than of any other infection, thus characterizing this uniform series of seventeen cases of tularemia as being of the typhoid type of disease, as defined by Major General Edward Francis of the United States Public Health Service.

An interesting article just came out in the Journal of the A. M. A. in which the Japanese worker, O'Hara, described that disease vividly and accurately, stating that in Japan especially the rabbits have that disease, and the humans have it with great regularity.

An infected lymph gland was sent from Japan to Major General Edward Francis and Major Dunlap Moore, surgeons of the United States Public Health Service. They were able to inoculate and produce the disease in guinea pigs. Their conclusions were that O'Hara's disease and tularemia are identical.

Since the human is quite highly susceptible then why is it not universally present. I think the answer is, the fact that there are not many insects that bite these animals (rabbits, ground squirrels) and bite the human. The horse fly will, but it is rather unusual. It is possible for the rabbit flea and the rabbit louse to bite humans, but they don't do so, except under almost a condition of starvation. Transmission has been produced from the flea and the rabbit louse to mice. Experiments were made with bed bugs feeding on an infected tularemic mouse. It was shown that for eight months the living tularemia bacteria were found in their feces. So the micro-organism is evidently difficult to kill.

Undoubtedly some cases diagnosed as typhoid fever are really tularemia.

It makes the laboratory worker do many things. In the presence of the negative Widal and blood culture he should look for tularemia of perhaps typhus fever (Brill's disease).

DR. S. F. STRAIN, Memphis (Closing): I thank you for the way you have received the paper, and for the discussion.

A very common location of the primary lesion is in the eye. The first human case was discovered as a conjunctival ulcer. A number of cases have been reported in which the first lesion was an ulcer of the conjunctiva.

One interesting thing about the infection is that pus from the suppurating lesion does not seem to be so extremely contagious. We handled it very carefully, however, after we discovered what it was. There has been no case reported, where ordinary care was taken, that the disease was transmitted from the patient to the physician.

Most of the rodents are susceptible; the rabbits, guinea pigs, squirrels, rats, mice and ground squirrels. It seems to me that in view of the fact that the human organism is so susceptible it would be a serious thing to get this very wide spread among rodents in a town.

We had an unusual experience. Just about the time we were planning to inoculate a guinea pig, the night before we were to inoculate him a large rat got in the cage and killed him. We felt it was fortunate we had not inoculated the pig because the rat probably would have contracted the disease and there is no telling where it would have stopped.

I think this disease ought to be looked for all over the state. I was interested to know if there were any men from around Greenville that had seen anything that simulated this disease. On numerous occasions Dr. Francis has reported that he has found rabbits coming from Greenville infected with tularemia. I am sure there must have been some cases in market men there who handled the rabbits. Another thing, I wondered if there are not a great many more cases than we really have seen. It would be absurd to think that I have seen all the cases that have occurred in Memphis or Tennessee. There surely must be a great number of cases that have never been reported. We ought to make it a reportable disease and let the Boards of Health know about it, to prevent any widespread contraction of this serious illness.

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J. F. GALLAGHER, M.D. -----Editor

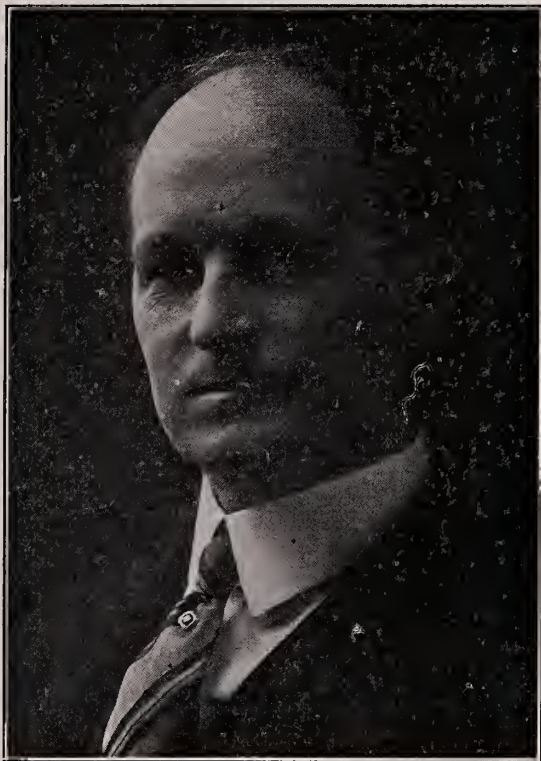
OCTOBER, 1926

EDITORIAL**MEDICAL EDUCATION**

To those interested in medical education, the article by Dr. Franklin S. Newell, of Boston, which is reprinted in part from the American Journal of Obstetrics and Gynecology under the heading "Miscellaneous" in this issue of the Journal, should prove of interest. Dr. Newell speaks in no uncertain terms in regard to the present vogue of all-time clinical teachers and the emphasis placed by some medical schools on research for both teacher and student. He takes a very pessimistic view of the quality of medical graduates of recent years and sums the situation up in the very pertinent epigram that the graduate of today may have been taught more but has learned less. It would seem that at least some of the leading teachers of the Harvard Medical School are turning from the idea of all-time teachers in the practical branches, especially where the teacher has not had a previous wide clinical experience.

OUR NEW OFFICE

Probably for the first time in its existence the Journal is now located in an up-to-date office building. In anticipation of this event the Board of Trustees, at its meeting in June, authorized the removal of the office to its present location, which is at 810 Bennie-Dillon Building, Nashville. A cordial invitation is extended to all the members to pay the office a visit when in Nashville.

DEATHS**DR. JAMES MOORE KING**

Dr. King was born in Murfreesboro, Tenn., September 5, 1867. He was the son of Charles Hayes King and Anna Wood King. He was educated in the public schools of Rutherford County and after graduating from high school there came to the University of Nashville, from which he graduated in 1892 with the degree of Bachelor of Science. He continued his studies at the university and received his M.D. degree in 1896.

Soon after his graduation from the medical school, however, Dr. King left the practice and took up farming. He later taught school, and following that was clerk in the railway mail service. He was chemist to the State Board of Health from 1897 to 1903, and resigned this position to study abroad from 1904 to 1906.

Upon his return to Nashville he was made a member of the Board of Education

of Nashville. In 1912 he became associated with the Vanderbilt medical faculty and specialized in dermatology. He was head of the department of clinical dermatology at the time of his death.

Dr. King built up at Vanderbilt a reputation as a teacher and a practitioner that was far reaching. He continued his private practice in connection with his teaching and was a widely sought authority on diseases of the skin. He was a member of the Southern Medical Association, the Tennessee Medical Association and the American Medical Association.

In March, 1893, he married Miss Mary Lewis Neal, of Nashville, who survives him. Besides his mother, Mrs. Ann King, Dr. King is survived by three brothers, Dr. Joseph King, of New York; George King, of Murfreesboro; Sparks King, of Beaumont, Texas; and four sisters, Miss Janette King, Miss Anna King, Mrs. J. M. Floyd, of Murfreesboro, and Miss Patti B. King.

The following resolutions were passed by the Nashville Academy of Medicine:

Whereas, Dr. James Moore King, a beloved and useful member of the Nashville Academy of Medicine and the Davidson County Medical Society, was called by death in the city of New York on the 12th day of October, at the age of fifty-nine years; and

Whereas, Dr. King had spent his whole professional life in the practice of medicine in Nashville, and as a member of this Society; and

Whereas, He attained an enviable reputation and success in the practice of his specialty of dermatology, in which by patience, hard work, close observation and assiduous attention to his office and his patients, he came to be recognized as a foremost dermatologist; and

Whereas, He was a prominent and able teacher and was at the time of his death professor of clinical dermatology in Vanderbilt University, where he has taught for a number of years; and

Whereas, In a word, Dr. King was good and kind and true to all his obligations as he saw them and by these and his diligence

and intelligence and success honored the profession of medicine and served mankind will; therefore, be it

Resolved, That the Academy of Medicine recognizes and laments the great loss that Dr. King's untimely death brings upon its own membership, upon the profession of this city, the state and the whole Southland, upon Vanderbilt University and its students and patients, and that our deepest sympathy be extended to Mrs. King and the old mother, the brothers and sisters who survive him.

Be it further Resolved, That a copy of this resolution be sent to Dr. King's wife, one to his mother, and that it be published in the daily newspapers of Nashville.

W. A. BRYAN, Chairman.

A. W. HARRIS.

L. W. EDWARDS.

Nashville, Tenn., October 19, 1926.

Dr. Andrew L. Glace, retired physician of Elkton, died September 26. Dr. Glace was a graduate of the University of Nashville, Medical Department, in the class of 1875.

Dr. Armistead H. Miller, aged 70, of Paris, died October 5. Dr. Miller was a graduate of Vanderbilt University, School of Medicine, in the class of 1888.

Dr. Albert Binkley, of Nashville, died September 26. Dr. Binkley was a graduate of Vanderbilt University School of Medicine in the class of 1879.

NEWS NOTES AND COMMENT

Dr. E. E. Northcutt, who has been practicing in Newport, will return early next spring to resume the practice of medicine there.

Dr. A. A. Oliver, of Paris, has entered into a partnership with Dr. Frank S. Harkeroad, of Bristol, and Dr. J. E. Parks, of Somerville. They will have offices in the Thompson Street Hospital.

MEDICAL SOCIETIES

At the semi-annual meeting of the East Tennessee Medical Association, held in Maryville, Dr. J. W. McMahan, of Alcoa, was elected president; Dr. W. E. Howell, of Morristown, was elected vice-president for Upper Tennessee, and Dr. B. L. Ogle, of Knoxville, was elected vice-president for lower East Tennessee. Dr. Jesse C. Hill, of Knoxville, was re-elected secretary-treasurer.

At the recent annual meeting of the Walnut Log Medical Society, which was held in the Walnut Log Club House at Reelfoot Lake, the following officers were elected: President, Dr. Willis Moss, Clinton, Ky.; first vice-president, Dr. M. A. Blanton, Union City, Tenn.; second vice-president, Dr. W. F. Peebles, Clinton, Ky.; secretary-treasurer, Dr. Lyle Motley, Dyersburg, Tenn. The next annual meeting will be held some time in May, 1927.

MISCELLANEOUS

The following is an excerpt from the Presidential Address presented at the fifty-first annual meeting of the American Gynecological Society by Franklin S. Newell, of Boston, and published in the September number of the American Journal of Obstetrics and Gynecology. Dr. Newell is Professor of Clinical Obstetrics, Medical School of Harvard University; Obstetrician, Massachusetts General Hospital; Visiting Obstetrician, Boston Lying-In Hospital.—Ed.

This progress in obstetrics and gynecology is part of a general advance which involves the whole of medicine and which has had a great influence on medical teaching. New specialties have been developed and have found a place in the medical curriculum. The laboratory branches have assumed an increasingly prominent place in medical education and have to a very unfortunate extent encroached upon the time formerly devoted to clinical teaching, and medical education, the final aim of which is the training of doctors, has gradually passed more and more under the domination of the laboratory group, which is com-

of patients and who have little conception of the training necessary for a practicing physician. We are most of us teachers as well as clinical practitioners, and it is our duty to so train students that they shall be fitted to minister to the needs of patients, unless we are ready to admit that the work of the great clinicians of the past is of no value to the community as compared to laboratory research. A sound scientific training is important, but it behooves us to see to it that the present tendency to over-emphasize the importance of the so-called fundamental medical sciences in our medical schools is reduced to a sane basis. The great majority of medical students expect to practice medicine, but they are often unfitted for this end by their very training, owing to the undue emphasis laid on laboratory diagnosis and treatment, and the much reduced attention given to the training of their powers of observation and to the study of the patient. Conditions must be changed, since, unless the student is fortunate enough to supplement his medical school training by an internship under a good clinician instead of, as often happens, under a full time appointee who has never had any clinical experience outside of a hospital ward, he is obliged to enter practice, if in fact he dares to do so, with little practical training in the care of the patient and none in the humanities of medicine.

The medical course has been gradually lengthened in the last fifty years, first to three and then to four years, while in some institutions a fifth or hospital year is either required or is under consideration. In spite of this lengthening of the medical course the amount of time devoted to clinical subjects has been relatively curtailed, until an entirely disproportionate amount of time is devoted to the laboratory sciences, in the attempt to make them not an adjunct to the proper training of physicians but the pre-dominating force in medical education.

The raising of medical standards should result in attracting a higher grade of men to the profession than formerly, as well as in turning out better equipped physicians, but in my judgment the student body of to-

posed of men who have never taken care day is not of as high a grade as it was ten to fifteen years ago. Apparently the present system is dwarfing instead of developing the average student, the curtailment of the time allowed to the clinical courses resulting in the teaching of too much predigested material instead of aiding him to develop by the study of patients under intelligent guidance.

Many of the ablest men in medicine today would find it impossible to enter a Class A medical school without returning to college to take a special course to meet the entrance requirements, and yet they are among the leaders of the profession. The required premedical course is of such a nature that unless a student decides relatively early in his college career to study medicine he cannot complete the required work without devoting at least an extra year to it, a sacrifice of time and money which many men cannot afford to make. Theoretically the premedical course should raise the standard in the medical school by eliminating the relatively unfit and the poorly educated. It does this to some extent, but it also eliminates many men who after careful and mature consideration arrive at the decision toward the end of their college course that they wish to study medicine. Many who are relatively unfit for the practice of medicine decide early that they wish to enter the medical profession and take the necessary courses which enable them to do so, while a considerable number of men who are in every way unusually well fitted for the profession are barred from it, unless they are able to devote one or two extra years to preparation, and these men have been in the past among the ablest students even without the preliminary course at present required and are today at the top of the profession. In addition the marks obtained in college are often the principal basis on which fitness to study medicine is judged, and thus the man of many interests during his college course who is distinctly a well-rounded man is often refused a chance to study for a profession for which he is superlatively well

fitted, while a second-rate man who has devoted himself to obtaining high marks in his college courses is accepted. My own impression of the average medical class in our own school, which is supposedly hand-picked from a large number of applicants, is that while there are few very poor men in the class, the number of men of outstanding ability is so small that the average is certainly no higher than it used to be and the general impression is one of distinct mediocrity.

My own experience, gained from teaching fourth year students and from dealing with house officers who come to us from various hospitals and medical schools, has convinced me that the students of today are not as well fitted to enter the practice of medicine as those of fifteen years ago. They have perhaps been taught more but have learned less. Their knowledge of the laboratory side of medicine is greater, but when it becomes a question of making a patient comfortable and of meeting the human problems that arise, they are singularly helpless and have little self-reliance.

I feel strongly that, in spite of the great increase in the cost of a medical education necessitated by the research and teaching laboratories, the results are meager. I do not wish to infer by this statement that I do not favor the maintenance of research laboratories in connection with a medical school for the purpose of advancing medical progress in every way, or in any way grudge the expense involved, since I believe that future progress depends on a judicious co-operation between the clinical and research branches, but I do believe that the education of competent physicians to care for the needs of the community suffers when laboratory teaching dominates our medical schools at the expense of clinical training as at present. Less than five per cent of a class, according to recent figures, enter the research branches of medicine and yet the whole class must take an exhaustive training in laboratory work which so crowds out clinical training as to work a serious injustice to the ninety-five per cent or more who wish to practice medi-

cine. Furthermore, a considerable number of men who might be useful and able physicians are dropped from the medical schools each year because they fail to reach the standard of laboratory excellence required, their fitness to continue their studies being judged by men who have never practiced medicine, and yet they are college trained men selected from a large number of candidates.

Before a proper balance can be restored and the study of medicine placed on a sane basis, the present undue importance given to the so-called fundamental sciences must be materially reduced, by which I mean that they must be so taught as to be an aid to the clinical training which is to follow, and not as if the end-result aimed at was to make every student a laboratory investigator. In other words, medical education should primarily serve the ninety-five per cent who hope to practice medicine instead of the five per cent who hope not to. Under modern conditions the great majority of medical students must depend on their postgraduate hospital training for much that should be taught in the medical schools in order that the five per cent may need less postgraduate training. The conditions should be reversed.

The great function of the medical schools used to be to train doctors to care for the sick and suffering in the community. The outstanding teachers were men of wide clinical experience who inspired the students by their teaching and example. Such of the medical sciences as were taught were included because they aided in the development of better doctors. With the development of new specialties it was realized that the student must be given some instruction in them, although the only adequate training was to be obtained by postgraduate study. The time to be devoted to the teaching of these specialties was obtained by lengthening the medical course from three to four years, but the four cardinal medical subjects, surgery, medicine, obstetrics, and pediatrics, were still taught by men of broad clinical experience and occupied the major portion of the course, supplemented

by practical work in the out-patient departments and by a hospital internship later. With the increase in the laboratory branches of medicine more time had to be provided if the student was to receive an up-to-date medical education. Since this could only be done by decreasing the time devoted to clinical instruction, it has been so arranged, and the community which pays the bills is the sufferer.

The great clinical teacher has either disappeared or his opportunities for teaching have been so curtailed that his efforts are largely in vain. The control of medical education has been taken over by the laboratory group who are always able to devote an indefinite amount of time to meetings and organization, and the influence of the clinical group in our medical schools is small. As a natural result the medical student of today receives an intensive training in the fundamental sciences, a fairly comprehensive course in laboratory medicine and research, a very minor training in the study of a patient as an individual and not as a test tube, and practically no instruction in the relief of suffering and in the humanities of medicine. This would be a good enough preparation if the primary object of medical training were to fit a man to do research or to practice entirely within a hospital, but it is a very poor training for a man who wishes to enter practice. It is a fortunate thing for the community that the students themselves realize that the training afforded by the medical schools has little practical bearing on the practice of medicine and that a prolonged training as intern and resident in properly equipped hospitals is absolutely necessary.

The increasing interest in research medicine has led to the establishment of full-time teaching positions in various hospitals which are affiliated with medical schools. Theoretically a full-time appointment should be ideal from the standpoint of research, the teacher of students, and the care of the patient. Practically, the patient suffers in most cases, because if a young man takes such a position, it means that he is interested primarily in research,

and perhaps somewhat in teaching, but that he has had little or no experience in the care of the sick. He may be able to stimulate interest in the study of various medical problems and thus as an investigator add to the prestige of his hospital, but the patients under his charge and the students for whom he is responsible are less efficiently served than they would be by a less scientific man of greater clinical experience.

The ideal full-time teacher is the man of wide interests and clinical experience outside the hospital, who elects a full-time teaching position as offering the widest opportunity for good in the community as a fitting close to an active career, and not the untried man who is selected because of his interest in laboratory problems, and who is sufficiently mediocre to be satisfied with the salary of a second-rate man, provided he can be in a position sheltered from competition.

In many cases the full-time teaching position is a menace instead of a benefit since it carries with it a prestige which is not warranted by the facts. Laboratory research is stimulated and therefore some increase in the sum of human knowledge probably occurs, but the man who wishes to enter the practice of medicine should not have to depend for his training on teachers who have never had to face the problems which are met in private practice and who are not interested in them.

The curricula of our medical schools should be revised. The control of medical education should be not in the laboratories but in the fundamental clinical departments, surgery, medicine, obstetrics, and pediatrics. Such of the laboratory branches as are of direct aid to the study of medicine from a practical standpoint should be taught, and what should be taught in these sciences should be determined by the clinical group. If a man wishes a further education in physiology or biochemistry, he should take that as a postgraduate course, just as a man who wishes to take up clinical medicine takes an internship, and the amount of laboratory teaching should be

cut down and placed on a practical basis. A considerable experience with students from our own and also from other schools leads me to believe that in physiology the attempt is made to train all students to become physiologists and not to instruct them in the application of physiology to practical medicine, and that a similar condition exists in other scientific branches. The time to be devoted to the cardinal clinical medical sciences should be increased to the limit and such time devoted to the teaching of specialties as is possible, with the understanding that no man can be educated as a specialist in the medical school. The clinical teacher should be a man of clinical experience and not a laboratory trained man who has never practiced, as is often the case. The scientific and clinical men should work side by side, and the student should be given a greatly increased training in the use of his powers of observation under the supervision of men who have been properly trained in clinical medicine, the laboratory methods of diagnosis only being employed after exhaustive study of the patient.

Most of us are teachers. Many of us realize the unsatisfactory state of medical education today. I believe that we, in conjunction with the other clinical societies, can accomplish most for the good of the community by a concerted effort to restore the teaching of clinical medicine and the fitting of men to enter practice to their proper position in medical education. The modern graduate may have been taught more, but he has learned less than his predecessors. He is a poorer doctor and often hesitates to enter practice except under the aegis of a hospital, because he has had very little training in practical therapeutics and none at all in the humanities of medicine. As has been well said by one of the greatest exponents of modern medicine, it is more important to know what kind of a patient is suffering from a disease than what kind of a disease a patient is suffering from, a fact which has been entirely lost sight of in our medical schools.

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THE ESSENTIALS IN THE MANAGEMENT OF THE GOITER PROBLEM*

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THE study of goiter is like the study of the human race. The ancient Hindu incantations dating from 2000 B.C. contain extensive exorcisms for goiter. Caesar mentioned the "big neck" as a peculiar characteristic of the Gauls. The Romans originated the term "cretin" by calling the myxedematous idiots Christians as an expression of contempt, but it remained for Paracelsus in the sixteenth century to emphasize the relation between endemic goiter and cretenism.

The peculiar function of the thyroid appears to be the splitting up of the iodine containing molecule of any compound of iodine which enters the organism (Marine) (ferrous iodide, sodium iodide, potassium iodide) and the conversion of the iodine into the specific thyroid product thyro-iodine or thyroxine (Kendall). The active principle of the thyroxine increases the excitability of the patient's nervous system. If the nervous system has been sensitized to this iodo-indole principle, the reaction will be very acute and very severe. The nervous system will stimulate thyroid activity and in turn the nervous system will be stimulated by the thyroid secretion causing a vicious circle. One or the other will be exhausted unless the process is stopped by some com-

manding influence, such as thyroidectomy. With excessive thyroid activity, life is dramatic, tense and responsive to every stimulus. With depressed thyroid activity the brain is dull, slow and stupid. Its activity is intimately associated with that of the liver and the adrenals and together they furnish the driving power of the brain and it in turn drives the entire organism of man and animals responsive to the change in environment. With special activities of the organism of man, emotional responses to varied environment, infections, certain changes in other endocrine glands, bearing offspring, hyperthyroidism, the volume of the thyroid gland increases. Thus with puberty menstruation and gestation and the emotional strains acting through the sympathetic, the female is more prone to enlargements at various times. At puberty the ratio of female to male goiter is six to one.

It appears that the study of the thyroid begins and ends with iodine. Meyer found that the iodine increased the electric conductivity of water in which nerve was immersed at the same rate that it increased the conductivity of the nerve itself. Animals in a state of acute iodism have been found to have an increased electric conductivity of the brain and increased temperature response to adrenalin, and according

*Read before the Tennessee State Medical Association, Memphis, May 11, 12, 13, 1926.

to Crile, myxedema is a state of chronic hypo-iodism, and hyperthyroidism—chronic hyper-iodism which induces hyperactivity of the brain, hence a controller of its sensitivity and its activity and hence a controller of metabolism. Marine states that the thyroid has to do in some important way with internal respiration or the utilization of oxygen by the tissues. It is the only known function of the gland.

Marine and Lenhart (1907) emphasized the fact that iodine was necessary for the normal function of the thyroid and that in active hyperplasia of the thyroid, the iodine store was reduced. The store of iodine normally consists of inactive iodine for the most part in the cells and of active iodine for the most part in the colloid or thyroglobulin. The iodine store is decreased in hyperplasia and is proportional to the degree of hyperplasia. Normal thyroids have the highest percentage of iodine averaging 0.2 per cent. with extremes of 0.1 and 0.5 per cent. The iodine store may be markedly increased by the administration of exceedingly small quantities of iodine and marked histological changes are at the same time brought about in hyperplastic glands, viz; the arrest of the hypertrophy and the involution of return of the thyroid cells to their resting form. These experiments have established the importance of iodine in the chemistry, function and histologic anatomy of the thyroid, and paved the way for their great demonstration of the practical prevention of endemic goiter and cretinism, as well as to clarify an understanding of the response of various types of goiter to iodine therapy.

GOITER, AN IODINE DEFICIENCY DISEASE

As soon as Marine demonstrated in animals that goiter was an iodine deficiency disease and that if the iodine content was maintained at or about 1/10 of one per cent, no anatomic changes towards goiter formation could take place, he came to the conclusion that endemic goiter's chief exciting cause was lack of iodine in the organism, relative or absolute, and that the infectious theory was untenable. With the support of the school authorities of Akron, Ohio, he proved that endemic goiter was preventable. This was accomplished by the admin-

istration of two grams of sodium iodide in two gram doses, distributed over two weeks, and repeated each spring and autumn. Of 2,190 girl pupils, the fifth-twelfth grades inclusive, only five showed thyroid enlargement. Of 2,305 not taking iodine 495 showed enlargement. Of the group showing thyroid enlargement taking iodine 659, 57.8 per cent. returned to normal while of the same group not taking iodine 134 or 13.9 per cent. returned to normal. These experiments have been duplicated with equally as good results by other investigators. Klinger, 1921, of Zurich, Switzerland, where school children are 100 per cent. goiterous after sixteen months observation had striking confirmation of the results obtained in Akron and it has been recommended as a public health measure throughout the most noted endemic goiter nations in the world. The dosage above has prevented goiter in ninety-nine per cent. of the children in mildly goiterous districts. The normal gland has a storage capacity of twenty-five to thirty grams and only a small amount of iodine is required to saturate the normal thyroid. In Switzerland as much as five mgms. of iodine is given each week for three years in some schools with a remarkable decrease in amount of goiter without any hyperthyroidism developing. It is said that the Swiss Army was decreased by one-sixth of its men by goiter. By utilization of this simple, inexpensive measure, the great economic gain is remarkable when we consider the great prevalence of goiter. The extent to which goiter prevails throughout the world is seldom appreciated. In the United States, the Great Lakes basin, in the basin of the St. Lawrence and in the northwest Pacific region, it is most prevalent. The Mason and Dixon line drawn across the continent shows the goiter belt above and the non-goiterous district below. In the south there were an average as a maximum, five military goiters per thousand drafted men, and above ranging from five to 111 per thousand men. The Cascade Range in Oregon, Washington and British Columbia almost equals the Alps and the Himalayas in the frequency of goiter. In Michigan during the Selective

Service Law the instance of goiter in some localities was as high as thirty per cent. causing disability from army service. In one instance it ranged as high as eighty per cent, while the seaboard, on account of the ease with which iodine-containing sea foods are obtained, is supposed to be relatively free and is as a rule. Still, in New York City twenty per cent. of thyroid enlargements was found in school girls. Incontestable qualities of iodine are as essential to the system as vitamins. Most of our iodine is obtained from dairy foods, fruits and leafy vegetables, but in these goiterous areas even these have a deficient quantity of iodine and all the animals as dogs, sheep, fish, etc., have goiter as well as man.

PREVENTION OF GOITER

Simple goiter ought to be the easiest disease in the world to prevent. The prevention of goiter in the mother and the fetus is as simple as the prevention of goiter which develops during adolescence. The prevention of goiter in the adolescent period should be a public health measure and should include the individual child from eleven to seventeen years of age or from the fifth through the twelfth grades under the supervision of experts.

The preservation of the normal thyroid secretion, which is nature's method of securing immunity from germ infection, makes the prevention of goiter more than an esthetic or sentimental consideration. With the general application of this practical preventive measure, endemic goiter and cretinism should not be a problem in any civilized nation of the world in a few generations.

The simple goiter or hypertrophy of the gland at adolescence has been considered. The use of iodine in non-goiterous diseases, as syphilis, in which the patient has a normal thyroid, even in large doses does not cause the gland to hyperfunction. This is sufficient evidence to show the safety of giving iodine to school children but not to adults before goiter develops under careful supervision because if they do not have goiter, iodine in reasonable amounts will do no harm.

The clinical classification of thyroid diseases (Plummer) is a valuable aid in determining the best mode of management of these thyroid abnormalities, and are as follows:

1. Diffuse colloid goiter.
2. Adenomatous goiter without hyperthyroidism.
3. Adenomatous goiter with hyperthyroidism.
4. Exophthalmic goiter.
5. Myxedema.
6. Cretinism.
7. Childhood myxedema.
8. Thyroiditis.
9. Malignant disease of the thyroid.

1. Diffuse colloid goiter. Marine and Kendall showed that the danger of giving iodine to children in this country is negligible even if a small colloid goiter is present. It usually and regularly disappears under iodine. The general experience is that the giving of iodine to diffuse colloid goiter under twenty is safe and very often curative, while above this age, the frequency with which hyperthyroidism develops increases. Plummer found in cases of colloid goiter that developed hyperthyroidism under iodine therapy, that as the colloid material decreased, he could feel adenomatous nodules which were confirmed by the pathologist on section after thyroidectomy. The older the patient, the larger the goiter, and the more likelihood of the gland containing adenomata, although not palpable on examination, and the greater is the danger of inducing hyperthyroidism by iodine therapy. Kocher described this toxic syndrome as Iodine-Basedow.

II. Adenomatous goiter may produce symptoms by its mechanical presence or may be symptomless. However, they may begin to grow at any time. They can be removed with minimum risk. The fetal adenoma belong to this type and fully ninety per cent of malignant goiters; two per cent of all originate on this basis. There may be borderline cases difficult to differentiate which the pathologist is unable to diagnose definitely and are called precancerous or malignant adenomas. All

adenomas of the thyroid should be removed surgically if no contra-indications exist because they are a source of potential danger.

III. Adenomatous goiter with hyperthyroidism (toxic non-exophthalmic goiter) presents the symptoms of Grave's disease without exophthalmus, but shows tremor, tachycardia, extreme nervousness and weakness. It makes its appearance on the average at the age of forty-two, exophthalmic at thirty-two. It appears ten years earlier and lasts on an average fourteen years before the appearance of toxic symp-



Fig. 1. Multiple adenoma, non-toxic. Removed successfully by Dr. W. O. Floyd in our Clinic. These are the growths that in five per cent of cases ultimately become toxic if not removed and are not curable by iodine.

oms. Exophthalmic goiter shows its intoxication on an average nine-tenths of a year from its inception. The exophthalmic reaches the zenith of its first curve of severity at the end of six months but the toxic non-exophthalmic case does not seek consultation until three years on the average after the toxic symptoms appear. This shows the insidious development. There are two general classifications.

1. Those in which the cardiac symptoms are most pronounced. The clinical symptoms are similar to the cardio-vascular pic-

ture that is seen in alcoholism, luetic or other septic toxemias.

2. Those which simulate very accurately Grave's disease, save the exophthalmos. The administration of iodine over a long period of time at times increases the severity of the symptoms in this toxic adenoma. As the cause of disability in these cases is arteriosclerosis or myocardial weakness, the heart should be thoroughly examined by all modern methods, not omitting to note its ability to stand strain. It is extremely important to institute treatment before permanent damage is done the heart and kidneys. These patients require individual and scrutinizing care in their preparation. A long rest in bed with digitalis and cardiac as well as renal fitness should be demonstrated. Toxic adenoma is not definitely improved by ligation which gives a marked improvement in exophthalmic goiter, over twenty pounds following ligation within three months. The operation for toxic goiter is quite as dangerous, even more so than in the exophthalmic type. It is not due to the toxic, but the general condition of the patient. Indeed, there are cases which have all of the cardinal signs of exophthalmic goiter except exophthalmos.

IV. EXOPHTHALMIC GOITER

Exophthalmic goiter is manifested by tremor, tachycardia, nervousness, exophthalmos, with resulting weakness.

Importance of early operation. As soon as the diagnosis of exophthalmic goiter is made, plans should be made for its surgical treatment. The earlier the operation, the less damage to the vital structures and the more rapid and complete the convalescence. The usual course of such cases is that there are periods of remissions in which the symptoms greatly improve, only to be followed after a varying time by an exacerbation worse than the previous one. In selecting the case suitable for operation, it is simply a matter of choosing the time for operation rather than the type of case. Practically every case of advanced toxic or exophthalmic goiter will sooner or later require surgical treatment to restore reasonably good health. The case that represents

a serious risk during exacerbation may become a safe risk during remission.

A careful physical examination should be made to determine the exact state of the myocardium. The blood pressure readings and the degree of dilatation of the heart and the rhythm should be noted over several days. No case should be operated in the presence of edema of the extremities or ascites. A renal function should be determined if there is evidence of cardiorenal disturbance. The patient's mental state is an important factor. The onset of delirium and coma should defer operation. Evidences of mental deterioration is a most unfavorable sign. A steady loss of weight is a contra-indication for operation, as is a high basal metabolic rate that cannot be brought into safe limits, say below forty-five. The average rate in exophthalmic is plus fifty-six per cent.

Lugol's solution, ten or fifteen drops, is



Fig. 2. Extreme exophthalmos persisting one year after successful thyroidectomy for neglected exophthalmic goiter. Exophthalmos in the right eye was so extreme that panophthalmitis had developed and the eye had to be removed. Left cervical sympathectomy indicated if the exophthalmos, which is the last symptom to disappear, persists.

given at bedtime for a period of one week or ten days. More may be given if the condition demands it and in extreme cases 100 minims a day. If not tolerated by the stomach, double the doses by rectum. Iodin and rest will take the basal metabolic rate down from plus fifty to sixty per cent. to plus twenty or thirty per cent. in a week.

The effect of iodine ceases rapidly and its administration must be continued throughout the operable period. To insure a sufficient amount of iodine double the dose is given the day of and the day following the operation. Many cases which enter the hospital with gastric, intestinal or cerebral crises, can be rescued by giving 100 minims of Lugol's the first few days and then ten minims three times a day until the acute state is controlled. If properly administered it reduces the surgical mortality rate of the disease to a negligible percentage. It cannot be too strongly emphasized that iodine is a preparatory measure for surgery only. It simply palliates and does not cure. It is miraculous the wonderful way in which these patients quickly return to a safe condition; the nervousness is markedly ameliorated, the basal rate very materially reduced. The exophthalmic goiter, like the tide, should be taken at the flood at the maximum of improvement. Otherwise, the golden opportunity may be sacrificed. If the patient has had a previous course of iodine elsewhere, the magical effects, as an immediate preparatory measure for operation, will be much less striking or may be absent. Therefore, the great need of reserving this valuable agent as a pre-operative measure. This has greatly reduced the number of ligations, but ligation is still a valuable test to determine the patient's response. If he has a too severe reaction after ligation of the superior thyroid artery, the operation should be postponed until a more opportune time.

The radical explanation of the benefits derived from Lugol's solution temporarily is found in the supposed replacement of one of the iodine radicals that has been lost from the atom. Pure hyperthyroidism does not explain the syndrome so much as a dysthyroidism. The iodine, therefore, seems to convert the chemically imperfect secretion into a better quality temporarily.

In toxic adenoma there occurs a pure hyperthyroidism due to the irritation presumably of the presence of the tumor in the gland and a defense mechanism on the part of the gland in manufacturing an ex-

cess of secretion in the effort to preserve its own function. It is, therefore, a pure hyperthyroidism and the iodine does not seem to have the same beneficent influence that it does in the dysthyroidism. It is helpful, but not striking in its beneficence.

The post-operative metabolic test should be made every few months to see whether or not a normal function is reached. If at the end of a year the patient has still an increased basal metabolic rate, the probabilities are that there are either some focus of infection that should be eliminated or an additional amount of thyroid will have to be resected if there has been a renewed growth of the gland.

We have found the x-ray and radium valuable in cases who did not have a complete restoration from removal of too little of the gland. In nearly every instance we have found amelioration of symptoms after one to four monthly x-ray treatments. We have also found the x-ray to be a valuable means of lowering the basal metabolic rate and decreasing the thyroid activity of the bad risk cases who had not reached sufficient improvement after Lugol preparation or after ligations to do a thyroidectomy. We have occasionally used it as a palliative measure in the frank, inoperable cases and in a few cases have had gratifying results. It is not, however, of itself a dependable and regularly curative agent.

The bad risk cases. In these cases before operation the management must be carefully planned and at the most opportune time a ligation of one superior thyroid artery, and then from four to six days later the opposite side. Later a lobectomy and if necessary packing the wound with flavine gauze and removal of the gauze and closure of the wound after twelve to forty-eight hours, and after an interval repeated on the remaining lobe. Too little rather than too much is done and the best interest of the patient is always protected.

In addition to a well timed and well planned operation with local and gas analgesia with trained assistance, careful post-operative care must be observed. The plan of letting the patient come out of the anesthesia to cough before closing the wound is

valuable in seeing whether all bleeding has been checked. All cases are drained to prevent collections of fluid and pressure symptoms and in the advent of hyperthyroidism, iodine is administered, together with refrigeration and detoxication measures if there is any thyro-toxic fever. If there is too free hemorrhage or weakness from loss of blood, blood transfusions are resorted to. The protection of the patient from every possible danger is the keynote of success. The operation of thyroidectomy or surgery of the thyroid by careful management is a safe surgical procedure.

Crile reports 1,022 thyroidectomies for exophthalmic goiter with mortality of 1.4 per cent.

Mayo Clinic mortality from exophthalmic goiter in 1923 was 1.4. In 1,000 patients iodinated before operation, not one had a severe post-operative goiter reaction. Clute in three years reports 1,376 operations with mortality of .58 per cent and .819 per cent.

The operative deaths have been reduced below two per cent in exophthalmic goiter, and has reached the minimum of six-tenths per cent. It may be said that the surgical treatment of goiter is comparable with the surgical removal of pelvic or other tumors.

CONCLUSIONS

1. Endemic goiter is a preventable disease.
2. Iodin should never be used in goiter except for definite indications, namely:
 - a. In the prevention of endemic goiter in school children.
 - b. In selected colloid goiter, especially under twenty.
 - c. To prepare exophthalmic goiter and toxic adenoma for operation.
3. Iodin should not be used for old adenomatous goiters, as it frequently converts a quiescent condition into a toxic one.
4. Adenomas of the thyroid in persons over twenty should be removed under local anesthesia, as a considerable number become toxic after some years and especially if iodine is administered.
5. Exophthalmic goiter is essentially a surgical disease.
6. The present mortality of goiter surg-

ery compares favorably with that of other major surgical operations.

DISCUSSION

DR. J. B. HASKINS, Chattanooga: Dr. Crutchfield has read us a very classical paper on thyroid conditions.

The only objection I see to his paper from the standpoint of the general man would be that he gives too many classifications. I think if one could appreciate that the average man sees but few goiters in this section he would understand why we cannot get a mental picture of all the different types. But for his own convenience and the patient's good if he would divide all of them into two, toxic and non-toxic, I think he would get along better, and I am sure the patients would. Remembering that the non-toxic don't need the iodine.

I heard Dr. Crile say recently that iodine did toxic adenomas just as much good as it did hyperthyroids, a thing we thought a few months ago was bad treatment. He also said that if you treated simple adenomatous goiters with iodine you would convert them into the toxic-adenomata.

So those are a few of the points that I think would be worth while to the average man that sees a goiter occasionally.

DR. C. R. CRUTCHFIELD, Nashville (closing): In the paper here I took up the reason for giving iodine to these cases. That is what I tried to bring out in the paper, the classification of these cases.

From a practical working standpoint goiters can be divided into four classes. The so-called simple goiter. That is a type of case that comes in adolescence, about from twelve to twenty years of age. In that case you can give iodine, too, in the presence of the goiter and in the large majority of the cases the goiter will disappear. It is a colloid goiter as soon as it becomes enlarged. And when it takes on a nodular feel it is

an adenomatous goiter and should not be given iodine under any circumstances, because it will be converted, in a large number of cases, into a hyperthyroid case.

Many cases are converted into this type of case by taking the patented goiter remedies. After a patient gets to be above twenty years of age it is dangerous to give iodine without very careful examination and supervision.

Now the value of iodine in the toxic type of goiter is at times astonishing. Those cases are made less toxic by the administration of iodine. They are suffering from the hyperthyroidism of the tissues and giving them iodine puts the system in a more normal balance, and they can carry on.

At about the tenth day or twenty-first day they reach their maximum improvement. After that the improvement begins to drop. For that reason iodine, in the toxic cases, should not be given, except when you are preparing them for operation. If you give them iodine before you prepare them for operation you lose all the value of the iodine in the preparation of these cases for operation. You have lost your golden opportunity and you never can do like you can at that initial time. Iodine should be given to those cases only in the hospital when preparing for operation.

At the Mayo Clinic they have used this on both types with good results. They are using it in both types because they can't always differentiate prior to operation. They have reduced the mortality from almost prohibitive down to, in the last series, about one per cent, which is comparable with any other major surgical procedure.

The three points. Iodine will prevent anatomic goiter. It is valuable in the simple colloid goiter, and should not be given to other goiters except in preparation for an operation. We believe that the operation for goiter is, at the present time, in careful hands, who have had a great deal of experience, as safe as any other major surgical procedure.

STERILITY IN THE FEMALE*

LUCIUS E. BURCH, M.D., F.A.C.S., Nashville

STERILITY must be said to be present if conception fails to take place within the first few years of married life. Some writers on this subject have arbitrarily fixed the period of three years, others at the end of five years. This definition would not apply to those cases in which contraceptive measures have been employed.

Sterility is also divided into primary, secondary, and absolute. Primary sterility is where conception fails to take place in the allotted time. Secondary is when the woman bears one or more children and is then unable to conceive. Absolute sterility applies to those cases where conception is impossible on account of an absence or lack of development of some of the organs of generation. It is impossible to compute accurately the per cent of sterile marriages due to the fact that preventives are so commonly used. The majority of statistics on this subject show that ten to twelve per cent. of marriages are sterile.

It is not within the province of this paper to go into details regarding the etiology of this condition. It is, however, necessary to mention the chief etiological factors in order to intelligently discuss the treatment.

It is to be remembered that the fault often is in the man, and for this reason it is absolutely necessary that he be proven guilty or innocent before the female is even considered. An accurate history is essential. In addition to the usual routine history it is important to ascertain the amount of exercise that the patient takes. It is also of great importance to determine the quality and amount of food taken daily, the habits of patient should be ascertained such as the number of hours of sleep, how often coitus is indulged in and if gratification is complete following it. The character and

amount of discharge should always be noted. The patient should be carefully questioned about her digestion and also if she is constipated.

The etiological factors must be placed under five heads:

1. Constitutional diseases.
2. Faulty or lack of development of genital apparatus.
3. Diseases of the genital apparatus.
4. Diminished fertility, sometimes spoken of as sexual incompatibility.
5. Racial differences or consanguinity of partners.

The etiological factors under number one are many and for this reason a rigid physical examination is supplemented by all laboratory aids.

Some of the constitutional diseases that produce sterility in the female are as follows: One of the most common causes of sterility is adiposity associated with a hypoplasia of the sexual organs. This usually is brought about by a disfunction of the endocrines. Obesity resulting from thyroid, pituitary or ovarian hypofunction is quite common, and obesity from over eating may in itself be an etiological factor. Acute and chronic infections may cause a diminution of ovarian function and in this way result in sterility.

Focal infections may likewise bring about an atrophy of the ovaries with sterility and hyperinvolution after severe labor may cause sterility. Chronic systemic diseases such as diabetes, renal and pulmonary diseases are not uncommonly associated with barrenness. These conditions are not absolute barriers to impregnation.

Chronic alcoholism, cocaineism, and morphinism often cause sterility. Organic nervous conditions or profound anemia frequently prevent impregnation. Functional nervous diseases may cause a temporary sterility but as a rule it is not permanent.

*Read before the Nashville Academy of Medicine, November 8, 1926.

Lack of sexual desire or gratification plays but a minor role in conception although it is thought to be more likely in those with a normal sexual impulse.

Over-indulgence in the sexual relation may instigate sterility as a result of repeated and prolonged pelvic congestion. It has been shown by experiments in rats that a well balanced ration is quite important. This is an important matter in the present day woman. Quite a large number of them do not eat a sufficient amount of food for fear of taking on too much fat. There are others who are gourmands and are unable to control their appetites. Diseases of the hypophysis have a very distinct influence on the genitalia with atrophy of the ovaries, amenorrhea, sterility and lack of secondary sexual characteristics. Diseases of the thyroid frequently produce sterility.

2. Lack of development is divided by Graves into two varieties.

a. Fetalism, which means a faulty or an arrested development that takes place in intra-uterine life and is well represented by the various forms of uterus didelphys or an absence of one or more of the reproductive organs.

b. Infantilism presupposes that the individual has been born with a full equipment of genital organs but during childhood an arrest in development takes place so that in the child bearing age the organs retain the infantile characteristics. This is seen in the form of long cervix and a short uterus with a marked antelexion with the cervix pointing toward vaginal outlet and sometimes resting on the anterior vaginal wall.

3. Diseases of the genital apparatus are quite common causes of sterility. Gonorrhea is by far the most common disease that produces sterility both in the male and in the female. In women it brings it about by sealing the ends of the fallopian tubes and by injuries to the mucous membrane and in this way destroying their function as oviducts. It also produces a cervicitis and the plug of mucous and pus in the cervix not only acts as a barrier to the entrance of spermatozoon but also destroys them.

Tumors and cysts render a woman less liable to conceive. I have one case on hand at the present time that was sterile for ten years and conception followed in a year's time after the removal of a dermoid tumor. The tubes were inflated six months after the operation and conception took place six months after the inflation of the tubes. Cervicitis associated with erosion and eversion of the cervix following a laceration of this organ is often an etiological factor. It is easily relieved by a few applications of a cautery to the everted and eroded surface. I had the wife of a professional associate to conceive in one month after a cautery application to an eroded cervix.

Displacements of the uterus are thought by many to be a bar to conception. I realize that they occasionally produce sterility but that it is the exception rather than the rule. Relaxation of the vaginal outlet may produce sterility. In my experience this is rare. It is thought that the relaxation causes an "effluvium seminis." Some women, following coitus, have a muscular contraction causing an effluvium seminis. This however rarely produces sterility for the reason that only a part of the semen is ejected from the vagina. It is a wise precaution, however, to instruct this class of women to remain in the dorsal position and with the hips elevated after coitus.

It is quite important to remember that the cervix should form a right angle to the vagina. If it points toward the vaginal outlet or if the cervix rests on the anterior vaginal wall conception is much less likely. Exceptions to this rule frequently occur. I now have under my charge a woman with a complete prolapse of the uterus who is three months pregnant.

A few of the most common causes of the female genital apparatus have been mentioned. There are many others that I will not attempt to mention. It is, however, important that a painstaking and careful pelvic examination be made in order to detect any abnormality or disease.

4. There are some cases where sterility cannot be accounted for by any physical defect in either partner. This is well illustrated in the case of Napoleon and Jose-

phine. Josephine had two children by her first marriage, the marriage with Napoleon was barren, but Napoleon in his second marriage with Marie Louise had a son. Reynolds and Macomber seem to think that examples of this kind as brought about by diminished fertility of both partners and when each party is mated with one of stronger fertility conception takes place.

These same gentlemen have shown that in rats only sixty-five out of every 100 matings were productive of young, yet on persistent remating every individual proves to be fertile with some other partner, even though it might have had as many as four, five, or even six unproductive matings previous to that. Every individual, therefore, was fertile but the fertility of some individuals was vastly greater than that of others. This condition is also spoken of by some authorities as "sexual incompatibility."

5. It is a well known fact that the mingling of certain widely different races leads in several generations to sterility. Illustrations of this are the Octoroons who represent repeated minglings in three generations of whites and negroes, Lipplapps of Java who represent in the same way the union of the Dutch and the Malays. This is a good example of race degeneration. It has been supposed that Octoroons are absolutely sterile but this is not entirely true. The same example is seen in animals; in the mule, which is absolutely sterile.

Consanguinity, beyond a question of a doubt, limits fertility. A good example of this is in the royal marriages in Europe which show out of two hundred marriages between blood relations in various European royal families sixty-five, or thirty-two and five-tenths per cent, were sterile.

Treatment: It is well to impress on any couple that a most careful and painstaking examination will be necessary for both parties and that many embarrassing questions and examinations will be necessary before the case can be intelligently treated.

It is first necessary to eliminate the male and this can be done by an examination of a condom specimen. If active sperma-

tazoon are found we know at once that the female is at fault. The next step is to look for spermatazoon in the vagina, the cervix and sometimes even in the uterus following coitus. If the spermatazoon are found dead or inactive in the vagina it is presupposed that the vaginal secretions are inimicable to them. This is generally brought about by a highly acid secretion of the vagina and it may be relieved in a certain number of cases by using an alkali douche before coitus. I was able in one case to relieve a six year sterility by this simple procedure.

If live spermatazoon are found in the vagina but none are found in the cervix or uterus it plainly shows that the cervical secretions are the bar to conception. Relief of this condition may be easily brought about by appropriate treatment to the cervix. Operations for the relief of displacements or lacerations should never be carried out until the patency of the fallopian tubes are determined. It is a useless procedure to operate on any woman as long as the tubes are closed. Quite a number of women will conceive following the simple inflation of the tubes. This is explained by a closure of the tubes from light adhesions and the pressure of the gas breaking up these adhesions and in this way overcoming the closure of the tubes.

Peterson had thirteen conceptions in thirty-three cases of inflation of the tubes. I have never been able to obtain a result equal to this. I have had, however, several cases in which the conception did occur following the Reuben's test.

This test should also be carried out after an operation on the tubes. These operations as a rule are unsatisfactory and if the Reuben's test is not carried out following the operating there is but little chance of obtaining results. Total abstinence should be advised in those cases where there has been an over-indulgence. Abstinence should continue from three to five months and then they should be instructed to have coitus six times within the intermenstrual period, which is considered the normal amount for most people.

Artificial impregnation is a procedure

that has been used but little in the human being. Meaker, in a recent article in the Boston Medical and Surgical Journal, September 2, 1926, reports several successful cases. He advises that if the first injection is not successful that it be tried a number of times before it is given up as a failure. Now the profession knows fairly accurately at what times rupture of the graafian follicle takes place. It may be that this procedure will be more successful in the future than it has been in the past. I have used the method quite a number of times but have only been successful once. I might say that this procedure is

sometimes followed by severe uterine cramps and it is best to inform the patient of the possibility of these cramps coming on following the injection.

A marked improvement in the last decade has taken place in the treatment of sterility. Many cases, however, will come for examination in which it is absolutely impossible to do anything. On the other hand there are a certain percentage in which one will be rewarded with a successful result after a painstaking study and examination of the case and then carrying out the proper procedure that each individual case demands.

A STUDY OF THE ETIOLOGY OF GRANULOMA INGUINALE*

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THE following study of the etiology of granuloma inguinale was undertaken for the purpose of determining the nature, transmissibility and differential diagnosis of the causative agent and the period of incubation of the infection.

Granuloma inguinale is manifested by a granulomatous proliferation and ulceration of the cutaneous and subcutaneous tissues about the inguinal region, often extending down to involve the external genitals.

HISTORICAL

The literature dealing with the etiology of granuloma inguinale is limited and inconclusive. Castellani (1) states that Conyers and Daniels, in 1895, first satisfactorily described granuloma inguinale, and it has since been considered a definite clinical and pathological disease entity. Donovan (2) in 1905 observed oval bodies measuring 0.5 to 2 micra in diameter in macrophages, either scattered or in small compact groups, in smears made from granulomatous lesions of this disease, and expressed doubt as to their location in the animal kingdom. In subsequent literature these bodies are called Donovan bodies. Flu, in 1911, quoted by Castellani (1) and others, described a pleomorphic bacteria found regularly in cultures from the lesion which Aragao and Vianna in 1912 (3) confirm and classify as calymmatobacterium granulomatis. Walker (4) in 1918 stated that the essential etiologic factor was an encapsulated bacillus of the Friedlander group. Symmers and Frost (5) in 1920 stated that the Donovan bodies either ini-

tiate or promote the tissue destruction. Randall, Small and Belk (6) in 1922 reported the cultivation of a bacillus from three cases which they also identified as belonging to the Friedlander group. However, they failed to cultivate it from nine cases. In one, typical lesion, Donovan bodies were demonstrated in five different smears. Yet four cultures were negative for the encapsulated bacillus of the Friedlander group. Gage (7) in 1923 reviewed the literature and quoted Wise, Maitland and Bosonquet as having found spirochetes in direct smear from typical lesions. Johns (8) in 1924 found that it required differentiation to demonstrate the chromatin of the Donovan bodies. Because of this and inability to stain the same by simple and capsular stains, its slow disintegration into granular, pinkish masses, its intracellular nature, the non-convincing proof of cultivation, he regarded it as a protozoan. Cornwell and Peck (9) in 1925 isolated from three cases a pleomorphic organism having characteristic beaded morphology seen only in young primary cultures. Living cultures of this organism injected subcutaneously into rabbits produced granulomatous lesions at the site of injection, the chronicity of which was not very well established.

SPONTANEOUS CASES

Observations made upon fifteen spontaneous cases of granuloma inguinale are given in Table 1. All of the fifteen cases were negroes whose ages ranged from nineteen to fifty-five years. Ten were males and five females. Seven were single, five married and three widowed and widowered. Typical Donovan bodies were found in direct smear from lesions in fourteen cases and grown in pure culture from eight of

*Read before the Tennessee State Medical Association, annual meeting, Memphis, Tenn., May 11-13, 1926.

†A complete report appeared in the Journal of the American Medical Association, September 25, 1926, Vol. 87, pp. 996-1001.

TABLE I—SPONTANEOUS CASES OF GRANULOMA INGUINALE

Number	Date	Name	Age	Race	Sex	Marital State	LESION						Formol-gel Test	Treatment	Remarks
							Character	Site	Duration	Exudate Monos	Donovan Body	Cultures	Biology		
1	1924	MN	33	N	M	S	Typical	Inguinal	2 yrs.		+	No		Tartar	Improvement
2	Oct. 3	AW	26	N	F	S	Atypical	Introtitus	3 yrs.		+	+		Emetic	Improvement
3	Nov. 17	AT	25	N	M	S	Atypical	Vaginal	6 wks.		+	+		Emetic	Improvement. Suppurative adenitis
4	1925	BJ	55	E	M	S	Typical	Inguinal and Anal	13 yrs.		+	No		Emetic	Improvement. Died
5	Jan. 8	RF	35	N	M	M	Typical	Penile, Scrotal and Anal	12 yrs.	85%	+	No		Emetic	Improvement. Wife has no lesion
6	Apr. 4	AL	40	N	M	W	Typical, Multiple	Inguinal, Perineal	9 mos.	85%	+	+	Typ	Ultra Violet 2 doses	12 doses Autogenous Vaccine; 30 cc sat. sol. KI; no improvement. GV 2.1 gm. intravenously. Improvement
7	Apr. 7	S	22	N	F	M	Atypical	Vulval	3 mos.	50%	+	No		Emetic	Improvement. No transmission through coitus to six men
8	May 11	CW	30	N	M	S	Typical	Inguinal	5 yrs.	80%	+	No		Emetic	Improvement
9	May 11	MG	36	N	F	W	Typical, Healing	Anal and Vulval	12 yrs.	73%	—	—		Emetic	Improvement; previous tartar emetic treatment.
10	July 11	JM	30	N	M	S	Typical, Multiple	Inguinal, Anal and Neck	2 yrs.	45%	+	+		Emetic	Improvement. Agglutinins in serum 1:80 dilution.
11	Sept. 1	SH	19	N	M	S	Typical	Inguinal, Perineal	5 yrs.	82%	+	+	Typ	GV .734 gm. intravenously in 3 doses	Tissue transplanted into experimental case (S). No Donovan bodies found after 5th dose of GV. Improvement.
12	Sept. 3	OR	34	N	M	M	Atypical	Inguinal	3 wks.	50%	+	+	BF Typ.	Autogenous Vaccine 5 doses	Tissue transplanted into guinea pig. Negative after three months. No improvement.
13	Oct. 12	MW	45	N	M	M	Typical	Inguinal	7 yrs.	82%	+	+	Typ	Tartar Emetic	Improvement
14	Nov. 16	BS	40	N	F	W	Atypical	Introtitus	3 yrs.	58%	+	+	Typ	Tartar Emetic & GV 0.1 gm.	Many exposures through coitus; no transmissions. Improvement.
15	Dec. 16	AK	30	N	F	M	Typical	Vaginal	4 yrs.	70%	+	+	Typ	Tartar Emetic	Pos. precipitin and allergy tests with antigen (S). Husband not infected. Improvement

Typ—Typical; GV—Gentian Violet; KI—Potassium Iodide; BF—Bacillus Friedlander.

these. The cultured organism always presented similar morphological and cultural characteristics and morphologically was similar to Donovan bodies seen in direct smear from the lesions. Typical lesions, elevated, granulomatous, slightly ulcerated surfaces, oozing sanguinolent fluid, existed in ten cases and atypical, excavated ulcers in five. The inguinal region was involved in ten cases. One typical lesion was observed on the neck in one instance. The duration of these lesions ranged from three weeks to thirteen years. Large mononuclear cells were most numerous in the exudate obtained by aspirating the lesion with a large bore needle and syringe, while from the surface the polymorphonuclears were most numerous. The encapsulated bacillus of Friedlander was cultivated from one case. In sections made from biopsy material, fixed in formalin and potassium bichromate* and stained with hematoxylin and eosin the Donovan bodies were seen intracellular and exhibited good cellular detail, with the oil immersion objective. In relatively young lesions active proliferation of the endothelial cells lining the smallest capillaries was observed, and in cross section the uniform appearance of these capillaries was striking. Numerous plasma cells invade deeply the corium and subcutaneous tissues, and frequently show mitosis. In some areas fibroblasts predominate, while towards the surface the polymorphonuclear cells predominate. The large mononuclear cells so readily identified in smears made from the lesion are more numerous than the fibroblasts in some areas. The marginal epithelium is hyperplastic. The formol-gel test† was positive in fourteen cases. Agglutination tests were tried with organisms obtained from spontaneous case

(A. L.) and agglutinated in dilutions 1:80 in two cases. Complement fixation, precipitin and allergic tests with antigens prepared from organisms cultures from experimental case (S) were done on one spontaneous case and were positive. Nine cases were relapses and the remainder were early untreated cases.

TABLE II.

Experimentally Transmitted Case of Granuloma Inguinale.

1925.

September 1—A piece of granulation tissue 3x3x3 mm. taken from inguinal lesion of spontaneous case (SH) containing Donovan bodies was planted subcutaneously into the right inguinal region. The formol-gel test was twenty-four hours negative.

September 8—There was an ulcer at the site of graft 2x1x.5 cm., well defined, adjacent skin glazed. The formol-gel test was seventy-two hours negative. The lesion exudate contained phagocytized Donovan bodies and fifty per cent large mononuclear cells.

September 12—One c.c., twenty-four-hour broth culture, organism from spontaneous case (OR) (encapsulated bacillus of Friedlander) was injected subcutaneously into left inguinal region. Simultaneously, one c.c., forty-eight-hour, one per cent glycerine culture of organism from spontaneous case (AL) was injected into right inguinal region at a point distant from the site of tissue transplant. Chill, fever and chest pains of three hours duration followed.

September 15—Left inguinal gland was swollen with very little tenderness and redness. There was less swelling on the right side. Graft ulcer was clean and healing.

September 19—Graft ulcer was healing and much smaller. The formol-gel test was six days negative. Ten per cent eosinophiles and thirty per cent large mononuclear cells and a few extracellular, atypical Donovan bodies were observed in smears from the lesion.

September 26—Graft ulcer was healed completely. Slight swelling of left inguinal gland still present. The formol-gel test was twelve hours positive, which was the first time this was noticed.

October 3—Direct smears of aspirated juice from left inguinal gland were negative for Donovan bodies. Sterile cultures were obtained.

October 10—The formol-gel test was twenty-four hours positive.

October 17—Site of transplant showed an active process. It was crusted with a small amount of dried secretion, which, when removed, revealed a small amount of grayish, purulent material. A pure culture of Donovan bodies on Sabourand's medium was obtained. The organism agglutinated in the patient's own serum 1:80 dilution. Antigen made of this organism gave positive allergic reaction in spontaneous case (AE). The formol-gel test was forty-eight hours positive. Typical intracellular Donovan bodies were observed in smears from the lesion.

October 20—The formol-gel test was thirty-six hours positive and typical Donovan bodies were observed in smears from the lesion.

October 24—The new ulcer was granulomatous and raised above level of the adjacent skin. It

*Equal parts of ten per cent formalin and two and one-half per cent aqueous potassium bichromate is an excellent fixative fluid.

†This test was first used by McIntosh (10) 1925, in case of granuloma inguinale, and is as follows: To 1 cc of patient's blood serum and 1 drop of formalin—i. e., 36 per cent formaldehyde in water—mix thoroughly, prevent evaporation and allow to stand for 48 hours. If positive, there is opacity and gelling of the serum; in some cases, in less than ten minutes.

was itching, oozed thin, sanguinolent fluid and was painless. Pure culture of Donovan bodies was obtained. The formol-gel test was thirty-six hours positive. Typical Donovan bodies were observed in smears from the lesion.

October 31—Ulcer progressive. Positive culture of Donovan bodies was obtained. The formol-gel test was twenty-four hours positive.

November 7—Ulcer beefy red and distinctly granulomatous. Positive culture of Donovan bodies was obtained. The formol-gel test was twenty-four hours positive.

December 4—Ulcer progressive. Size 3x1 cm. Biopsy was made. Tartar emetic treatment was begun.

December 21—Ulcer completely healed. Eight doses of one per cent tartar emetic, amounting to fifty-two c.c., were given. Antigen made from culture of spontaneous case (ES) gave negative skin reaction.

EXPERIMENTALLY TRANSMITTED CASE

Data relative to this case are presented in Table II.

On the eighth day after implanting the graft, the same had autolyzed and at its site there was an ulcer. On the twenty-sixth day this ulcer had healed completely, leaving a slightly indurated area.

On the forty-seventh day, exactly three weeks after graft ulcer had healed, the same area was for the first time covered by a slough and oozed a small amount of grayish, purulent material, smears of which contained typical, intracellular Donovan bodies. Pure cultures of Donovan bodies resembling in all known details those cultivated from the eight spontaneous cases were obtained. On the fifty-fourth day the ulcer was granulomatous, raised above the adjacent skin margin, oozing thin, sanguinolent fluid, and painless, but caused slight itching. On the sixty-eighth day the ulcer was progressive, beefy red, and granulomatous. On the ninety-fifth day the ulcer was 3x1 c.m. and clinically resembled the typical lesions of spontaneous cases. A biopsy section at this time revealed the characteristic histopathologic change of granuloma inguinale. Characteristic Donovan bodies were found repeatedly in smears from this ulcer. Four pure cultures of the same organism were obtained and agglutinated in the patient's serum up to 1:80. The formol-gel test, negative before and after implanting the graft, became positive for the first time in twelve hours on the twenty-sixth day after the graft ulcer had healed completely and remained so with time fluc-

tuations throughout the experimental period of 113 days. Eight doses of one per cent tartar emetic, amounting to fifty-two c.c., was administered intravenously between the ninety-fifth to the one hundred and thirteenth day, completely healing the ulcer, which has remained so to date. No other treatment was used.

BACTERIOLOGICAL STUDIES

Cultural Findings—Donovan bodies were cultivated from eight spontaneous and the experimentally transmitted case. It was also regained from a second case (see below) into which it was injected. It grew best on Sabouraud's medium as small, translucent, rounded, dome-like colonies with smooth margins, 0.5 to two mm. in diameter. After twenty-four hours the color of the surface colonies gradually progressed from translucency to opaqueness to grayish-brown. Body temperature favored the most rapid growth. However, good growth was observed at room temperature.

On Sabouraud's medium a few surface colonies were submerged and growth occurred anaerobically. Sub-cultures grew well on blood serum, nutrient agar, blood agar, sterile guinea pig's kidney in Sabouraud's medium. Hemoglobin developed around colonies on blood agar plates. No demonstrable growth occurred on gypsum blocks partially immersed in water. In liquid medium, sub-cultures grew well in the following: Plain broth, inulin, litmus milk, maltose, saccharose, dextrose, lactose, mannite, ascitic fluid and whole blood. The inulin, maltose, lactose, remain unchanged. Acid was formed in litmus milk, dextrose and mannite. The milk was coagulated. The supernatant fluid of the broth cultures remained clear for several days except for grayish, discrete, floccular masses along the side and on the bottom of the test tube. Growth on lead acetate agar produced no reduction. Gelatin was not liquified. 1:1000 dilution of gentian violet in broth, inhibited growth. This inhibitory action suggested the use of this dye in treatment. This was tried with result as stated in Table 1. One per cent tartar emetic diluted 1:16 with whole blood inhibited but did not stop growth. Although the ph

range was not determined, growth did not occur on medium with ph four. Growth in whole blood from spontaneous case (AL) occurred as large, grayish flocculi along the surface of the clot which was suspended in clear serum. Similar cultures in whole blood from white individuals, used as control, gave no such flocculi.

Morphological Findings—The organism was pleomorphic, coccoid to bacillary in shape, non-motile, non-sporulating, .5 to 2 micra in diameter, gram negative, and stained readily with Wright's stain. Primary cultures, vitally stained with brilliant cresyl blue, suspended in .85 per cent saline showed zooglea matrix, embedded coccoid forms and numerous, unequal tetrad grouping. The impression was obtained from study of vitally stained organism that the coccoid bodies multiplied in a line assuming a bacillary form, some of which would swell into large, oval bodies three or four micra in diameter. The coccoid form embedded in gelatinous non-granular matrix was the most constant, and those just mentioned were inconstant findings. The anaerobically grown organism was generally larger than one grown aerobically. The organism grown on lemco medium was oval to bacillary form and showed the most marked variation in size. Thread-like filaments were observed in cultures on this medium.

Inoculation Tests—One c.c. suspension in saline of a fourteen-day culture of organism obtained from spontaneous case (AL) was injected subcutaneously into the inguinal region of a colored male. Death occurred fourteen days later from carcinoma of the liver. There was no visible reaction at the site of the injection.

One c.c. suspension in saline or a forty-eight-hour sub-culture of organism obtained from spontaneous case (AL) was injected sub-cutaneously into the groin of a guinea pig. No visible reaction occurred.

Two c.c. suspension in broth of a forty-eight-hour primary culture from experimental case (S) was injected into the right groin of B. J., colored female, aged seventeen, having a negative formol-gel test, being treated for myelitis. Site of injection

was sealed with collodion. An abscess developed and ruptured spontaneously at the site of the injection five days later, and on the seventh day a large core was removed. Spontaneous healing followed and was complete on the sixteenth day. The formol-gel test was positive in seventy-two hours on the ninth day. Smears from the exudate contained ten per cent large mononuclears and ninety per cent polynuclear cells. Coccoid bodies resembling the Donovan bodies were present in the smear from the abscess. Pure cultures resembling the organism were obtained. Skin sensitiveness was manifested to antigens made from cultivated Donovan bodies from spontaneous case (AK) within twenty-four hours.

SUMMARY AND DISCUSSION

The study reported in this paper tends to prove that the Donovan body is the cause of granuloma inguinale by fulfilling the generally accepted evidence of specificity first stated by Koch. First, the organism was demonstrated in the lesion in fourteen out of fifteen spontaneous cases. Second, it was obtained in pure culture in eight of these fifteen cases. Third, a tissue graft from a spontaneous case in which Donovan bodies were demonstrated and from which they were isolated in pure cultures reproduced the disease in an individual not previously exposed in any way to the possibility of spontaneously contracting this disease. Fourth, pure culture of the Donovan body was again obtained from this lesion. And, further, antibody production against the cultivated Donovan body was demonstrated by the presence of agglutinins, precipitins, globulin changes and skin sensitiveness in the spontaneous and experimental cases.

A suitable antigen was made after the Hitchcock (13) 1925 method from subcultures of the Donovan bodies obtained from two spontaneous and one experimental cases and was used to demonstrate complement fixation, presence of precipitin and skin sensitiveness. Others have used antigens obtained from lesion scrapings. Frei (12) in 1925 refers to skin tests made upon patients having granulomatous lesions in whom he obtained positive skin

reactions with an antigen obtained from lesion scrapings.

The formol-gel test was positive in all of the spontaneous and experimental cases herein reported. The reason for its appearance in granuloma inguinale is that a disturbance in the blood globulin has occurred. Foulger (11), 1925, studied the chemical nature of the action of formaldehyde upon blood serum and concluded that gel production was due either to increased euglobulins and pseudoglobulin or a tending towards plasma protein saturation. No claim is made that it is a specific test for granuloma inguinale, but that it gives useful information concerning the progress of the disease.

The period of incubation appears to be rather long. An active lesion did not appear until the forty-seventh day in tissue rendered susceptible by trauma and tissue transplant in the experimental case; therefore, experimental injection of cultured organisms should be observed several months before conclusions are warranted. Susceptibility to granuloma inguinale infection is actual if the information from our four spontaneous cases is reliable. Many exposures by coitus failed to transmit the disease to other individuals, both in the males and females. However, transmission of the infectious agent is stated by Castellani (1) to occur by sexual intercourse. Further, it is of interest to note that all authentic cases thus far reported have occurred in the negro race, suggesting a racial predisposition.

Classification of the organism which we have cultured and called the Donovan body is left for further study. The name suggested by Arago and Vianna (3) of *calymmato bacterium granulomatis* is a better term than Donovan bodies, because of the suggested morphology.

The experimental lesion afforded an opportunity to determine whether the tissue change in the lesion of granuloma inguinale was specific. The swollen hyperplastic endothelia of the capillaries in zones where there are numerous, large, swollen, mononuclear cells filled with Donovan bodies, is

characteristic enough for diagnosis. The slight necrosis that occurs in granuloma inguinale may easily be accounted for by the swollen endothelia diminishing nutrition passing to the surrounding cells. The endothelial cells and large mononuclear cells swell relatively to the same proportions and similar swelling does not occur in the polynuclears, plasma, fibroblasts and lymphocytes which are found in these zones. One field showing a small capillary with two mitotic figures in its hyperplastic endothelial lining, suggests the source of the large mononuclear cells found so abundantly in the exudate. The harmful influence of the Donovan body in the mononuclear cell is unlike the influence of such organisms as the staphylococcus, bacillus tuberculosis, or the treponema pallidum. Though the cells may be filled with adult size Donovan bodies, the nucleus shows no toxic effect from their presence, as evidenced by maintaining its normal staining reaction and morphology.

CONCLUSIONS

1. This is the first reported instance of successful experimental transmission of granuloma inguinale from one individual to another.

2. Our data support the belief that the Donovan body is the cause of granuloma inguinale and that it is a bacterium unrelated to the Friedlander group of organisms.

3. Repeated exposure of normal individuals through coitus to those suffering with granuloma inguinale without their contracting the disease suggests that an actual break in the skin surface is necessary for successful inoculation and that the organism is infective only for susceptible individuals.

4. The growth of the Donovan body in rather low dilutions of tartar emetic may indicate that the action of the drug within the body may be indirect rather than direct.

5. The blood globulins are disturbed either qualitatively or quantitatively, or both, in granuloma inguinale. The disturbance may be determined by the formol-gel test.

6. Brilliant cresyl blue dye dissolved in physiological saline is a rapid and satisfactory stain for Donovan bodies when used without fixation and dehydration.

7. Gentian violet given intravenously was found to inhibit the progress of the disease. However, it is much less effective than tartar emetic.

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DISCUSSION

DR. WILLIAM LITTERER, Nashville: The Association is indebted to Dr. McIntosh for such a valuable contribution. I don't believe I have ever heard a paper that has so many real facts to it.

Even not fully agreeing that the micro-organism has been isolated, leaving that out, the other features of the paper I think are quite convincing. The question of transmissibility has without question been established and is the first case, so far as I know, that has ever been successful. The definite establishment of the "Donovan bodies" to the disease is a most valuable contribution to medical science.

Now, as to the question of the isolation of the micro-organism, I believe as yet it has not been established. Investigators are very apt to be misled by the finding of a certain type of micro-

organism fairly constant owing to the open or exposed ulcerated areas that exist in this condition, whereby outside infection readily gains access. Several years ago I thought that I had discovered the specific micro-organism of granuloma inguinale in an intensive study of seven cases occurring at the Nashville Hospital and the Vanderbilt Hospital. I succeeded in isolating a micro-organism belonging to the group of mucosus capsulatus bacilli. This micro-organism was demonstrated in five out of seven cases examined. They conformed to Koch law in every way except the important transmission to a susceptible animal which uniformly failed to produce the disease in quite a number of various animals tested. The patient's serum showed increased agglutinative power and antigenic response by the complement fixation test as compared with individuals not suffering with the disease.

By the failure to conform to Koch's postulate in toto I felt a hesitancy in publishing same and thus abandoned my investigations along that line. I was not able to obtain a person who would consent to be inoculated with the micro-organism that I had isolated. It would be exceedingly interesting if Dr. McIntosh could inoculate his micro-organism into a human subject and if a typical lesion be produced in which the Donovan bodies be demonstrated, then I think the chain of evidence would be quite complete.

I would also suggest if he could get another volunteer to take the macerated material from a case and run it through a Berkefeld filter and then inject the filtrate into this volunteer. This would be a step further in determining whether or not it was a filterable virus to which I am inclined to lean. Am of the opinion that the Donovan bodies are the results of an ultra microscopic virus.

I wish to thank Dr. McIntosh for his valuable contribution.

DR. H. C. SCHMEISSER, Memphis: The study of the etiology of granuloma inguinale, which has just been presented to you by Dr. McIntosh, was undertaken because just a very few years ago granuloma inguinale clinically was a rare disease in the United States. It was well known in the tropics, but only now and again a few sporadic cases were found in the United States, and then particularly in the southern part of the Southern States. Then, after awhile, a few cases were found here and there farther toward the north. Even now it is rare to find authentic cases very far spread in the United States.

I remember being at the University of Minnesota last summer. They had their first two cases, and were quite excited about them.

Because the condition is rare in the United States, and because even in the world's literature very little is known about it, one has to depend, until Dr. McIntosh did his work, upon the gross

picture, the gross characteristics of the lesion and upon the specific treatment, namely, tartar emetic. It clears up under this treatment.

When the inguinal region clears up under this treatment then the physician makes the diagnosis of granuloma inguinale. There were no other means, unless we refer to the Donovan body as described by Donovan in 1905. When we found out that Memphis was a good locality for granuloma inguinale, we found out there were quite a few cases here. Dr. McIntosh began this study a few years ago. He has brought together here fifteen authentic cases, which I think stand the test that they are clinically granuloma inguinale. With these fifteen cases he has found the Donovan body in fourteen out of the fifteen cases.

It would seem then that this organism as it is certainly always present is, therefore, of diagnostic value. That is the first point he has contributed.

Secondly, he studied the histology. He says he has found that there is a typical pathological histology. Then again he has cultured the organism. In eight cases out of fifteen he has cultured the organism. He has grown it on a medium and studied it morphologically. That is another help toward diagnosis. Then he has shown that in 100 per cent the specific treatment with tartar emetic is effective.

So we think that although he has not identified this organism nor the Donovan body, we think he has contributed means of diagnosis so that the physician now can make a diagnosis of the case which he suspects to be granuloma inguinale.

If Dr. McIntosh didn't do any more than give us a means for diagnosing this so-called fourth venereal disease he has given us a valuable contribution.

Until he started this study I was embarrassed when the physicians asked the pathologist. I knew of no means of making the diagnosis. I was embarrassed whenever they asked me to do so. Because you think it is granuloma inguinale does not make it so. You have to prove it. And the laboratory is called upon to prove it. We sometimes have our limitations. We think Dr. McIntosh has helped us to give certain tests which are pathognomonic for this so-called fourth venereal disease.

DR. JOSEPH SMITH, Memphis: You have heard the pathological side of granuloma inguinale very thoroughly gone into.

I have held the opinion for some years that the Donovan body was responsible for the disease. You see that the pathologists are at loggerheads on that point. Some authorities hold that they have isolated a spirilla that is the causative agent. I do not think so, because the majority of the spirillae respond to arsenical treatment. Some respond very favorably to the arsenicals, "606" or salvarsan.

Therefore, I think the causative agent must be of some other type of organism.

Dr. Schmeisser made the statement that it was comparatively recent that we had recognized granuloma inguinale in the Southern States. After about fifteen years of clinical experience in the clinics, what we took to be years ago as chancroidal conditions in the inguinal or genital region, I am convinced today that as far back as fifteen years ago in the clinic we had ulcers of the genital region that were granuloma inguinale and not chancroidal.

The diagnosis, the doctor has very aptly stated, is its response to treatment. Chancroidal infection generally responds very favorably to local treatment. I use treatments locally and get very fine results. Granuloma inguinale will respond miraculously to the tartar emetic intravenous injections.

No doubt it is more prevalent in the negro race and in the southern hot tropical climates. But it is not so scarce or so infrequent in the climates that we inhabit in this region in the temperate zone. I have seen a number of cases that I took to be granuloma inguinale in the negro. I have had one case in a white man in the last two years.

This diagnosis was not made pathologically, but was made clinically. He responded to no local treatment. His Wassermann was negative. He did respond very miraculously to the tartar emetic intravenous injection. Ulcerations were numerous. There were several in the inguinal region and on the prepuce. These ulcerations, after the first injection, were relieved of the pain. They bled profusely. After about five injections this man was practically well.

The treatment, therefore, is of more practical importance to the general practitioner and the man who sees an occasional case. If you have an inguinal enlargement that does not respond to local treatment then try the tartar emetic and you will generally get results if it is of the type of granuloma inguinale.

The specific treatments, it used to be thought, bore some relation to syphilis. I am still of the opinion that we have some other researches to make along this line. It looks like the Donovan body is the offending organism.

DR. WILLIAM KRAUSS, Memphis: I can testify to the enormous amount of painstaking labor that Dr. McIntosh has used in the production of this work, and I can assure you that he has added things to the literature which will stand without any question.

With reference to the subject itself, I read a very recent article referring to five thousand cases of treatment with tartar emetic in New Guinea. Not in Memphis. When we come to consider the organism itself there is still considerable confusion. The Donovan body must not be confused with the Leishman body. It has no

resemblance to it, and is not related to it in any way, so far as we can tell.

On the other hand, there is as yet no proof that a cultivated organism is the cause of the infection. Dr. McIntosh has not been able to produce the lesion from any cultures. There is a strong suspicion in the minds of a good many that we are not dealing with a bacterial organism, and one of the reasons is the fact of the therapeutic effect of tartar emetic which appears to be limited entirely to the flagellate organisms so far as we know at the present time.

With reference to the disease not appearing in white people, in the year 1920, Dr. Douglass Symmes, of Bellevue Hospital, of New York, had an article in the American Medical Association Journal in which he gave pictures identical with those shown on the screen by Dr. McIntosh. About that time a doctor in Memphis had a white man whom he had been unsuccessfully treating for about seven months. He had tried about everything ever used on the human body without any effect. He read this article and began to give tartar emetic. The patient got well. He now weighs 200 pounds. He weighed 130 at that time.

We took smears from that and we showed pictures identical with those that were shown you on the screen today. About the same time Dr. Medlar, who was then in charge of the Department of Pathology of the University of Tennessee, had some negro patients. We compared our pictures and were convinced and satisfied that they were the identical condition. They checked with the pictures of Symmes in the Journal. The smear is definitely diagnostic. The practical point is that the organism known as the Donovan body is unknown so far as its classification is concerned. The other practical point is no cultivated organism has produced the disease experimentally. The other important point is that you have a specific cure in the tartar emetic.

DR. I. G. DUNCAN, Memphis: I want to thank Dr. McIntosh for the tremendous amount of work he has done and for this very interesting paper he has brought up. There is one point particularly that I want to speak about in regard to the diagnosis of granuloma inguinale; that is, the specific effect of the tartar emetic.

At the out-patient department of the University of Tennessee we have quite a large clinic. Sometimes as many as thirty and forty patients a day. I believe about seventy-five per cent of them have chancroids. About a year ago some author from Germany gave some experiments

that he had done with the treatment of chancroid conditions with tartar emetic. We were very glad indeed to try anything. So we began to treat our chancroids, especially where they were complicated with adenitis; not necessarily buboes, but large glands characteristic of chancroids, which sometimes would break down, and sometimes would just stop and be hard and hurt and cause temperature. The patient became anaemic, and no matter what one does, it doesn't do any good.

So we began to give tartar emetic in these cases. The majority of them have responded very nicely. The glands begin to go down. Those that don't disappear will get soft and fluctuate and you open them and they get well without much trouble. The patient's general condition is improved. He has a better appetite and his temperature is gone. We cure them up in three or four weeks. It used to be six months or a year.

We have treated several hundred, and I think we have had sufficient experience to say positively that tartar emetic intravenously is certainly a beneficial aid in treating these forms of chancroids. So, in our experience, it does not necessarily mean because your patient is benefited by tartar emetic that he has granuloma inguinale.

DR. J. A. MCINTOSH, Memphis (closing): Regarding the specificity of the organism and about the postulates of Koch. I have conformed to the postulates. I simply used the tissue graft instead of the cultivated organism. If we cultivate an organism successively for a number of times it loses its disease producing power. If feeble it may be lost almost entirely. We injected the cultured organism into a human volunteer and produced an acute abscess. After several weeks this individual developed a positive formal-gel test which we did not get before the injection. This abscess ruptured on the seventh day after the organisms were injected. A core formed and when we removed it most of the exudate came with it. We doubtless removed many of the organisms, too. The patient perhaps was not very susceptible to this particular disease. A future study of the organisms will be made.

We are indebted to the inoculation of malaria for paresis, which caused the willingness of the volunteers. I am satisfied myself by the reactions that we have actually dealt with the cultivated Donovan body.

One thing about the therapeutic test. We have demonstrated very nicely that the experimental case responded to the therapeutic test of the administration of tartar emetic and a cure was established.

SURGICAL DRAINAGE OF THE INTESTINES*

H. H. SHOULDERS, M.D., Nashville

THE operation of enterostomy was first done about one hundred and fifty years ago. The occasions in which it was indicated arose infrequently until within the last few years. The development of new knowledge and new conceptions of what takes place within the abdomen in a variety of conditions has brought the principle of surgical drainage of the intestines into a much wider field of usefulness.

The importance of the stomach tube in dealing with conditions in the abdomen associated with intestinal stasis has been emphasized. This, after all, was a method of drainage of the upper intestinal tract. This procedure is mentioned in an introductory way to show that the recognition of the importance of drainage of the intestines has increased gradually as time has passed.

There are several methods by which drainage of any given portion of the intestines may be accomplished. There is some debate as to when drainage is indicated and as to the method to be employed under a given set of circumstances. For convenience of discussion, the conditions under which drainage may be indicated are classified into four groups:

OBSTRUCTIVE

Van Beuren has defined the terms obstruction and ileus and given each a separate meaning, which may be of some practical importance in keeping our minds straight on the matter. He says: "Acute intestinal obstruction is a local condition associated with sudden abnormal stoppage from any cause of the intestinal content." "Ileus is a general condition whose symptom complex appears when acute intestinal obstruction has existed long enough."

Regardless of definition, however, the

most important lethal factor in obstruction is a poison which is formed within the lumen of the intestine. The exact method by which this poison is formed is not agreed upon by investigators. The facts of the most practical importance are as follows: 1. The poison forms in the upper portion of the intestinal tract. 2. It is fatal in its effect. 3. It is removable by drainage.

Some physiological and anatomical facts should be mentioned here. The jejunum, which comprises two-fifths the length of the small intestine, is larger than the ileum. Its walls are thicker, though the muscular coat is not so thick. Its content is fluid. Its peristaltic action is rapid but with little force—slight pressure will obstruct the jejunum. The ileum is smaller, its wall thinner, its content less fluid, its peristaltic action less rapid, but with much more force than the jejunum.

After having remained in a state of dilation for any length of time the jejunum regains its contractile power less readily.

In any condition of obstruction there is a rapid accumulation of liquid content in the jejunum, and the quantity may become enormous.

Eisberg has emphasized the fact that one cannot determine the virulence nor the amount of the poison within the lumen of an obstructed intestine by its appearance. Nor can the viability of a certain portion of the intestine be determined easily by its appearance, while in a state of dilatation.

Then to the question: When should an intestine be drained in the obstructed state? The answer to this question is, "In all cases of obstruction of the small intestine." This drainage may be accomplished while the patient is on the table. It should be done even before the point of obstruction is searched for, to lessen the harm from manipulation and to give more time

*Read by title before the Tennessee State Medical Association, Memphis, May 11, 12, 13, 1926.

for the intestine to demonstrate its power of reaction after drainage.

Mr. Moynihan places a large tube in the lumen of the intestine and passes the tube far up. In less skilled hands a more complete emptying may be accomplished by passing a trochar and conula into several different loops of distended gut. All distended loops should be emptied.

Should drainage be continued? The answer to this question is more difficult.

If resection has been required the answer is "yes." If there is some doubt of the viability of the intestine, "yes, always." If the state of obstruction has existed for some time and the intestine in a state of dilation for a considerable time, the answer is "yes" to prevent a recurrence of the dilation in the weakened jejunum, as well as to remove poison. These seem to be the safest rules to follow.

INFLAMMATORY

Inflammatory conditions within the abdomen. In this group might fall the cases of post-operative ileus.

Mr. W. Sampson Handley some fifteen years ago coined the term "ileus duplex," and applied it to the ileus, which occurs in peritonitis. In his Hunterian lecture before the Royal College of Surgeons, delivered in 1925, on the subject of "Acute Generalized Peritonitis," he emphasizes and enlarges upon his previous contention. By the term "ileus-duplex" he means that virtual obstruction exists at two points in the intestine. One in the pelvic colon or sigmoid, the other in that portion of the ileum which rests normally in the pelvis.

It will be remembered that the sigmoid, as a rule, has a loop which lies across the bottom of the pelvis. The lower ileum, with the exception of the last four to five inches, rests normally in the pelvis.

He contends that peritonitis practically always begins in the pelvis, regardless of its origin. The first visceral peritoneum attacked is that of the pelvic colon and the pelvic ileum, with the result that an obstruction exists at these two points.

The obstruction is of inflammatory origin, of course.

This pelvic peritonitis may progress to

the second, or hypogastric stage, in which stage all the classical signs of peritonitis are present, and lastly, the terminal stage.

The terminal stage is reached and ends in a fatal termination before a general peritonitis ever exists. In other words, a general peritonitis actually never exists.

The practical deduction from all this is: That the patient with general peritonitis dies of intestinal obstruction. Handley insists that the lethal factor of greatest importance is the poison within the intestine which is the same as that formed in obstruction, that death will not take place if the bowels move, or if the intestine is drained, except when the infection is streptococcal with blood stream involvement. This contention is supported by the fact that the blood changes in this condition are the same as those in obstruction, and in addition by the fact that recovery often follows intestinal drainage.

Victor Bonnie was first to suggest and perform jejunal drainage in post-operative ileus. Mr. Handley points out that Victor Bonnie used the operation in cases which developed ileus following hysterectomy. Bonnie, it seems, appreciated the fact that a state of obstruction actually exists.

METHOD OF DRAINAGE IN THIS TYPE OF CASE

Mr. Handley opens the abdomen and selects a portion of distended but uninflamed small intestine and anastomosis this with the transverse colon. This drains the small intestine into the colon. He then does a caecostomy to drain the colon.

Long, of Greensboro, N. C., performed this operation a number of times on apparently hopeless cases with gratifying results.

A number of other surgeons support Handley's philosophy of what actually takes place, but contend that the operation he advocates is too radical; that the same end results may be accomplished by the simple operation of jejunal drainage, which can be performed in the patient's bed under local anesthesia.

Seton Pringle, of Ireland, contends that the intra-intestinal poison is formed principally in the duodenum, that it forms there in all forms of ileus, whether associated with organic obstruction or not. He

does a simple jejunostomy and insists that he gets good results.

We all know from practical experience that obstruction in the colon is far less fatal. It naturally would follow that drainage of the colon would be the less important of the two.

He insists that the jejunal drainage be established at the time of the primary operation if general peritonitis seems threatened.

Porter has drained the intestine in cases of puerperal fever with pelvic peritonitis and reports gratifying results. Others in gunshot injuries, diverticulitis, etc. In fact, the primary condition from which develops the pelvic peritonitis may be dealt with in whatever manner seems logical, but the lethal factor of poison within the intestine is never to be lost sight of.

PROPHYLACTIC DRAINAGE

Under this heading should be discussed such conditions as carcinoma of the colon and diverticulitis.

When the colon has been partially obstructed by a carcinoma, the colon bacilli become far more virulent than is the case normally. There is inflammation and thickening of the intestinal wall and mesentery far beyond the borders of the growth. The general condition of the patient shows the effects of intestinal toxemia. The location of the growth of the carcinoma which produces obstruction as well as diverticulitis, is most always situated in the descending colon or sigmoid. The colon should be drained by caecostomy as a preliminary step to removal. Mr. Moynihan explores such cases—determines the operative procedure that is likely applicable to the case, does a caecostomy as a preliminary step, and keeps it open until after the major operation has been performed.

Judd insists it should always be done. The patient is put in better general condition. The bacterial content of the colon is rendered less virulent; the inflammation in the colon and mesentery subsides, thus making possible and relatively safe a procedure that would otherwise be impossible or exceedingly hazardous for the patient.

MISCELLANEOUS

Under this heading should be discussed such conditions as duodenal fistula and retention following operations on the stomach.

Walters reports the successful healing of a duodenal fistula in two weeks time by jejunal drainage in cases of gastric and duodenal retention following partial gastrectomy. These patients show the blood changes characteristic of high intestinal obstruction.

The indications for surgical drainage of the intestines may arise under many circumstances. We are today called upon to pass judgment upon these indications with more frequency than heretofore. In many of them life depends upon that judgment.

TECHNIQUE

There are a few points in the technique which should be mentioned. It is apparent of course that the mechanics of draining the fluid content of the jejunum is a different matter from that of draining the semi-solid content of the colon.

A larger Paul's tube is most satisfactory for drainage of the colon.

In the ileum a small rubber tube suffices—someone suggested the use of the Pezzar catheter in the intestine. This I have used after removing a large part of the large end. This leaves a rubber tube with a thick wall, which does not kink, the end of which is flared out like a Paul tube. This end can be folded in the grasp of a forcep and introduced into the intestine through a small opening. A double purse string suture envelops the intestine about the tube. It will not come out, leakage will not take place around it if slight traction force is maintained to keep the flared portion against the intestinal wall. It can be clamped to prevent further drainage when drainage is no longer needed, thus preventing the loss of necessary fluids.

The jejunum can be drained through a No. 12 gauge soft rubber catheter. Size 18 is used by some.

The technique of Pringle or Coffee should be followed. Pringle introduces the catheter through a punctured wound in the in-

testine and fixes it with one suture. The wall of the intestine is then lapped over the tube for a distance of two inches by Lembert sutures after the method of Witzel's gastrostomy. The tube is then brought through a hole in omentum and through the wound. He says he has had no leakage following this technique. This tube can be clamped to prevent drainage of normal content after the necessary drainage has taken place. McKinna suggested the use of two catheters, one passed upward for drainage, the other passed downward to serve as a means of introducing glucose or soda solution into the intestine. This technique was followed by Walters in the treatment of his cases. In this case the ends of the tubes can be connected outside the body, which allows the fluid to pass out through one catheter and back through the other, thus preventing the loss of fluids.

The technique of interposing omentum between the intestine and parietal peritoneum was suggested by Dr. Will Mayo in 1917. The importance of this technique is emphasized by all. The intestine should not be sutured to parietal peritoneum if omentum is available. When the tube is brought through a hole in the omentum it suffices to prevent leakage and facilitate closure. It

may help to establish collateral circulation in a damaged gut.

An incision for simple jejunostomy has been suggested by Revdin, of Philadelphia, which seems preferable to the high left recus incision employed by some surgeons.

He makes an incision two inches long just posterior to and parallel with the anterior axillary line, beginning at the tip of the eleventh costal cartilage and cuts right through to peritoneum without regard to muscle fibers. In a majority of cases a high loop of jejunum will present, which will vary from eight to ten inches from the duodeno-jejunal flexure. If the descending colon presents it can be pushed backward, which will allow the distended jejunum to present. The enterostomy can then be performed following either of the techniques already mentioned.

It must not be forgotten that drainage for too long a time may be very injurious; when the necessary drainage has been accomplished it should be stopped.

In conclusion, I would offer an apology to the authors whose works have been read and whose names do not appear in the body of the paper.

This poetic phrase is apropos, "We have gathered posies from other men's flowers, only the threads that bind them are ours."

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OF THE

TENNESSEE STATE MEDICAL ASSOCIATION

Devoted to the Interests of the Medical Profession of Tennessee

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J. F. GALLAGHER, M.D. -----Editor

NOVEMBER, 1926

EDITORIAL

OUR LEGISLATIVE COMMITTEE.

The convening of the State Legislature calls attention to the fact that the Tennessee State Medical Association has no Legislative Committee to look after the interest of the Association and organized medicine; that is to say, there is no committee that can function. As is well known, this committee is appointed by the President of the Association. In making this appointment the President is restricted by the Constitution and By-Laws in that the number on the committee shall be three and that one member shall be from each grand division of the State. In making the appointments for the current year—an important year, inasmuch as the Legislature is in session—the President complied with the Constitutional requirements but only the appointees from the east and west grand divisions of the State consented to serve. Apparently it was impossible to obtain a suitable member from Middle Tennessee to accept a place on this committee.

That such a condition exists can in no way be attributable to the President's action or lack of action, nor to his lack of diligence or ability to perform this duty. On the contrary, at least two major conditions exist, over which he has no control, which create the dilemma. In the first place there is no sound reason why the personnel of the committee should be distributed over the three grand divisions of the State. The State is not so large nor the interest of the profession so diversified that a group of members from any part of the State could not perfectly understand

the fundamental, economic and professional needs of our membership.

To function most effectively the members of this committee should be in easy access of one another and of the Legislature when in session. It inevitably follows from these premises that the members should be chosen from Middle Tennessee, or at least the major working portion of the committee. It should not be inferred from what has been said that this is written as a plea for a restriction of membership on this committee to Middle Tennessee and in support of this statement attention is again called to the fact that it has been impossible to obtain one single man who is suitable to serve on the committee.

And this brings up the second point which is responsible for our functionless committee. It is the utter unfamiliarity on the part of the profession at large with the duties and responsibilities of this committee of Public Policy and Legislation. It is at once amusing and pathetic to observe the attitude of some of the members of the Association, and particularly some of the members of the House of Delegates towards this committee. They apparently have no conception of the work necessary to have a bill drafted, have it introduced in both Houses of the Legislature, create a sentiment in its favor, attend committee hearings and do the numberless other things necessary if a successful outcome is to be expected. To combat an obnoxious piece of legislation is none the less arduous. Legislation affecting the profession comes under the heading of general measures, in contradistinction to local measures, and therefore has the close scrutiny of the entire membership of the Legislature. Local measures, as a rule, are passed by mutual consent and as routine.

It will be seen that those capable of serving on the legislative committee are unwilling to give the time and energy to the task and hence, at least at this time, there is no committee functioning. However, it is consoling to note that there is scant promise of the present Legislature to enact any legislation that will be of great importance

either for or against the profession, and for that at least gratitude can be felt.

DEATHS

DEATHS

Dr. Wm. C. McDonald, of Soddy, retired physician of seventy years, died October 30. Dr. McDonald was a graduate of the Chattanooga Medical College of the class of 1887.

Dr. James H. Smith, of Trimble, aged 44, died November 4. Dr. Trimble graduated from the Memphis Hospital Medical College in the class of 1882.

Dr. A. B. Tadlock, of Knoxville, aged 90, died November 16, 1926. Dr. Tadlock was the oldest doctor of the old school in Knoxville.

Dr. C. M. Drake, of Knoxville, died recently at the age of 80. Dr. Drake was a former chief surgeon of the Southern Railway, with headquarters in Atlanta, Ga., also an army surgeon during the Spanish-American War.

Dr. J. W. Brandau, of Clarksville, aged 69, died November 28. Dr. Brandau was a graduate of the University of Nashville in the class of 1881.

MEDICAL SOCIETIES

At the monthly meeting of the Stones River Academy of Medicine on November 10, Dr. Henry F. Helmholtz, of the Mayo Clinic, presented to the society an illustrated paper on the subject of "Acute and Chronic Infections of the Kidney in Children." There were several guests present, notably Drs. Casparis, Dodd and Wilkinson, of the Vanderbilt Hospital staff, and Mr. Stoy, of the U. S. Public Health Service.

The Academy also adopted the following resolutions on the death of Dr. J. M. King, of Nashville:

"The angel of death has removed from the medical profession one of its worthy and honored members.

Dr. J. M. King was a native of Rutherford County, and in his death we feel that we have lost one of our very own. He was in truth a courteous gentleman and never in his relations with his professional brethren did he step down from that high plane of generous, unselfish courtesy.

His gentleness and his tender care of his patients bound them to him with great admiration and loyalty.

His life was a benediction, and it is with sad hearts that we, the members of the Stones River Academy of Medicine, bear our testimony to the nobility of his character and the loss we feel in his death.

Resolved, that copies of this be given to the papers and to his bereaved widow, also a copy sent to the State Medical Journal."

J. R. GOTT,

J. I. WARING,

V. S. CAMPBELL,

Committee.

The Coffee County Medical Society at the regular monthly meeting in Tullahoma, November 4, elected officers for the ensuing year as follows: Dr. J. H. Farrar, Manchester, president; Dr. E. L. Womack, Summitville, vice-president; Dr. U. B. Bowden, Pelham, secretary. Dr. J. K. Farris, of Prairie Plains, was host of the meeting, which was held at the Hotel King. A dinner was served, every member of the society being present. The next meeting will be held in Tullahoma, December 2, Dr. R. L. Dossett being the host.

The Tri-County Medical Society, composed of Carroll, Benton, Henry and Weakley counties, met in McKenzie, November 9, at the Hotel Lynn. The physicians of the town were hosts to a dinner, following which the retiring president, Dr. Taylor, of Martin, delivered the presidential address. Officers were elected for the ensuing year as follows: Dr. E. A. Travis, Como, president; Dr. W. P. McGill, Camden, first vice-president; Dr. E. M. Everett,

McKenzie, second vice-president; Dr. T. W. Fields, Dresden, third vice-president; Dr. R. M. Little, Martin, secretary-treasurer. Regular meetings will be held every month the second Tuesday, at the Hotel Lynn, McKenzie.

The sixty-fourth semi-annual session of the Middle Tennessee Medical Society held a two-day convention in Dickson, November 11 and 12, which was attended by a large number of physicians from various sections of Middle Tennessee. Officers were elected as follows: Dr. W. W. Porter, Springfield, president; Dr. E. M. Sanders, Nashville, vice-president; Dr. Sam P. Bailey, Nashville, re-elected secretary-treasurer. The next meeting of the society will be held in May, 1927, the place to be announced later.

TRI-STATES MEDICAL ASSOCIATION

All of us think sometimes there are too many medical societies, but one that has functioned regularly for nearly half a century must have something worth while about it, don't you think? And when that particular one gets better every year you know it must be worth while.

You may or may not know this one I am writing you about is one of the few societies *really* profitable both to men in general work and those engaged in special lines. It has no sections and every address is pointed right at the weak point in the whole scheme of the practice of medicine. And that is, as you have often thought, the border-line, where general medicine and the specialists work, and the latter ought to know a good deal of general medicine.

The Tri-States Medical Association of Mississippi, Arkansas, Tennessee, will meet at Hotel Peabody in Memphis, on February 1-3, 1927. For absolute *quality*, pure and undefiled, the program to be presented has never had a superior at any medical gathering in the South. That is a calm statement of fact, not boasting. There have been

several which had more *bulk*, but few have ever approached it in *worth*. Read the list of speakers on advertising page — in this issue and begin right now arranging your affairs so you can hear every one of them. It means an intensive, varied, post-graduate course you can't *afford* to miss! If you fail to receive a program, write me for one.

DR. A. F. COOPER,
Secretary-Treasurer.

Bank of Commerce Bldg., Memphis,
Tenn.

BOOKS RECEIVED

CLINICAL PEDIATRICS. By John Lovett Morse, M.D., Professor of Pediatrics, Emeritus, Harvard Medical School; Consulting Physician at the Children's, Infants' and Floating Hospitals, Boston. Philadelphia and London: W. B. Saunders Company, 1926. Cloth, \$9.00 net.

The author of this work claims that the book was written for his own amusement and in it has attempted to summarize what he has found necessary to know of the normal and abnormal in infants and children to properly examine, diagnose and treat those ordinarily encountered in pediatric work. In this work he has incorporated many valuable ideas gained from an extensive practice covering many years.

The text conforms to the title, in that emphasis is placed on the clinical always. Much space is given to diagnosis and stress is given to the value of accurate history and careful physical examination. The laboratory aids that give positive information are not omitted, and even the less helpful scientific procedures are mentioned. However, the author's chief aim seems to be to point out to the student and practitioner the things from which he may be able to diagnose and intelligently treat the patient when seen at the bedside without laboratory aid, so far as that is possible.

Treatment is discussed fully. Those measures that have proven helpful in his work are described. In his characteristic way the author condemns those procedures advocated by others which to him seem useless and which have failed to give results in his hands.

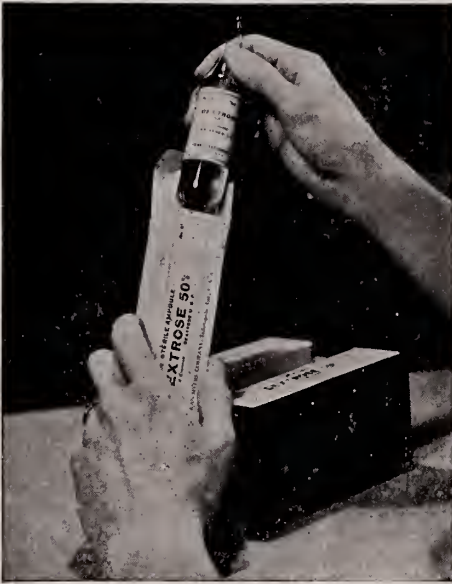
This book does not cover all pediatric subjects, as the author has included only those conditions most frequently encountered in his work and those in which he has been most interested. However, there are few omissions. Those subjects treated are fully discussed in their essentials and former pupils of the author will delight in the many individual touches that recall to them their teacher. The book is quite readable, interesting and instructive, and should appeal to both the student and practitioner.

J. M. L.

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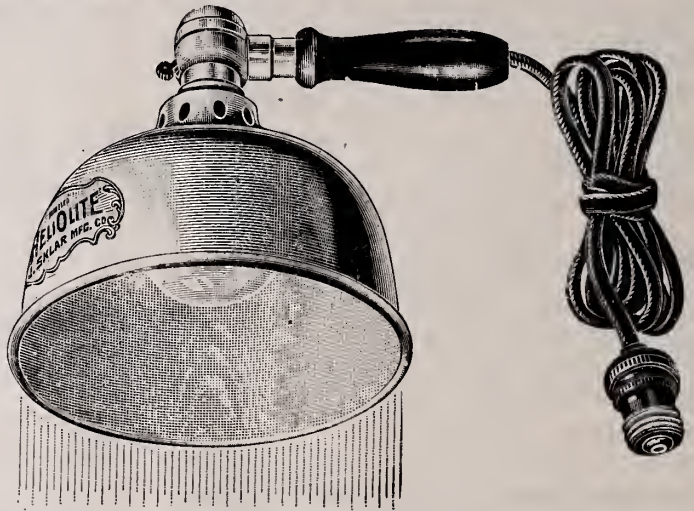
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POLYCYSTIC KIDNEY*

M. G. SPINGARN, M.D., Memphis

THE condition of polycystic kidney is one which has always created great interest among pathologists and clinicians, and a great amount of literature has been written upon the subject. The disease may develop at any age from birth to the eightieth year or later, but there is a striking freedom between infancy and adolescence, in fact so much so that a separate classification for congenital and adult forms has been made but this view is not now held. The tumors are believed to be present at birth, but may not begin to grow until after middle age.

The disease is, as a rule, bilateral, although one kidney is usually found more extensively affected. The condition occurs bilaterally about ten times more frequently than unilaterally, also a marked hereditary tendency has always been noted.

Pathogenesis. One fact is clear and that is that the cyst formation is due to occlusion of the urinary tubules. The fundamental cause of the occlusion is still shrouded in darkness, and as a result there is a wide diversity of opinion among writers on the subject.

Several theories have been advanced regarding the formation of polycystic kidneys; three deserve mention. First, Vir-

chow, who believed that the obstruction was due to an inflammation of the papillae. Second, the neoplastic theory in which it was thought that the process arose by epithelial proliferation in the tubules due to irritation, followed by degeneration which resulted in cyst formation. Third, the malformation theory in which the two embryonic structures forming the kidney as a whole more or less generally fail to unite. This is the most accepted theory today.

The disease consists of multiple cysts scattered throughout the kidney and immediately beneath the capsule. The tumor preserves the normal contour of the kidney, but is irregular and elongated. The cysts are closely packed together and develop toward the anterior surface of the kidney. Suppuration in some parts of the tumor is not rare. The cysts do not communicate with the pelvis or calyces but often with each other.

Symptoms. Pain is the most common; it is usually dull, aching in character, extending over a period of years. Hematuria, intermittent, lasting for days, followed by a complete remission, albuminuria and casts may occur. The picture may be one of pyelo-nephritis.

The pyelogram is the most important aid in diagnosis. The finding of the dragon-shaped pelvis and calyces, and the spider-

*Read before the Tennessee State Medical Association, Memphis, May 11, 12, 13, 1926.

legged calyx is pathonomic. In the usual form, the dragon pelvis, the cysts are mostly in the parenchyma, the kidney is enlarged in all directions, the effect on the pelvis in the longitudinal direction is the most marked, while the calyces at either pole may be spread apart. In rare instances if large cysts develop in the lowest portions of the columns of Bertini, the calyces may be stretched out over their surfaces, elongated and converted into thin convex slits, the so-called spider-leg calyces.

The condition must be differentiated from hydronephrosis, pyonephrosis, simple cysts, hypernephroma and other malignant tumors, and in this the interpretation of the carefully made pyelogram will suffice.

Report of Case. Mr. G. H. W., age 39, came to me on July 30, 1925, complaining of bleeding from the urinary tract; he was a tall, slender individual, slightly pale, and weighed about 135 pounds. Family history was negative except that one sister had her left kidney removed ten years previous, and according to his statement it appeared similar to a bunch of grapes; she now has a large mass in right abdomen.

About four years previous to his seeking aid of me he had a similar attack, ushered in by a very uncomfortable feeling in abdomen and back, followed by a severe hemorrhage from the urinary tract which lasted about thirty days; condition then cleared and he had no further trouble until the morning of July 30, 1925, when, without any warning except for a dull aching feeling in abdomen and back, he felt a de-

sire to void urine and passed a large quantity of blood. Examination revealed heart and lungs negative, a large mass in left lumbar region irregular in outline and hard. A smaller tumor could be palpated in right lumbar region. There was no tenderness, a large quantity of blood appeared in urine, also albumin, casts and pus.

Cystoscopic examination revealed bladder negative except for blood, which was washed clear. No. 6 catheter passed into right ureter met an impassable obstruction about half way up. No. 6 catheter also passed into left ureter to pelvis. Blood appeared from both sides. Indigo carmin delayed on both sides. Thalien output from right side in two hours fifteen per cent, left not satisfactory. A subsequent combined test at a later period gave twenty-five per cent in two hours. X-ray pictures show an irregular shadow on left extending from midway between ninth and tenth rib to upper border of fourth lumbar vertebra, and on right a shadow from tenth rib to third lumbar vertebra.

Right pyelogram shows an elongated pelvis with broadening of the upper and lower calyces at their upper poles, giving the typical dragon calyx and pelvis, also a large round shadow, filled, size of a quarter. This is thought to be an abscess opening into upper calyx.

Left pyelogram shows an irregular shaped pelvis with elongated thin calyces giving the spider leg appearance.

Diagnosis based on pyelographic finding and the history is double polycystic kidney.

TRAUMATIC RUPTURE OF THE KIDNEY*

EARL R. CAMPBELL, M.D., Chattanooga

VERY little is seen in current literature on the subject of injuries of the kidneys. Nature has indeed been kind to the kidney in placing it in a position where it is well protected from trauma. Considerable violence, or compression of the lateral walls, is necessary to produce serious injury. However, on account of the relationship between the lower ribs and the vertebral processes, the fluid content and the inelastic capsule of the kidney, serious injuries do occur. Women are much less frequently hurt than men. The "figure" of the female and the fact that they are not called upon to play such an active part in the battle of life render them less liable to accidents.

Any surgeon doing a large volume of emergency work sees a few cases each year of hematuria from trauma. Upon rest in bed and the application of heat to the renal region, most of these cases clear up in a few days. However, occasionally it becomes necessary to decide whether or not to operate. Then it is important to decide whether to remove the kidney or suture the rupture. Usually if the symptoms are urgent enough to cause operation, it will be found necessary to do a nephrectomy.

The symptoms to watch are: The amount of and duration of the hemorrhage, pulse, temperature, palpable mass in the kidney region and pain on passing blood clots. It is, of course, necessary to carefully observe and individualize each case.

Case No. 1: C. B., Mulatto, male, age 19. Came to the Newell Clinic January 12, 1926, complaining of "hurting spells" over left kidney. Family history—personal history: Previous diseases negative. On October 1, 1925, he and two other men were lifting a large sheet-iron pipe on a truck. The other two men turned loose, permitting the end of the pipe to roll to the ground. The patient was holding his end over the left kid-

ney region, supporting it on the crest of the ileum. He states very positively that there was a decided compression blow over his left kidney. He suffered a great deal, but went on with his work. In about two hours he urinated. Urine was decidedly bloody. He continued to pass blood every time he voided. The following morning he went to the company physician. An examination was made, and he was told to return the following day. Instead of doing so he went to a negro physician, who had been treating him medically until he came to us.

Patient states most positively that every time he has urinated since the injury he has passed blood. No frequency of burning on urination. Has had intermittent attacks of colicky pain, radiating from the left kidney posteriorly to the anterior iliac spine. He says that the pain remains there until something slips. He is then relieved and soon passes clots of blood.

Physical examination shows a well-developed, fairly well nourished, but very anemic mulatto male. Heart, lungs, etc., negative. Left kidney slightly palpable. Temperature 98, pulse 104, B. P. S. 146, D. 78. Urine looked like the bright red blood of one with a severe anaemia. Upon settling about one-third was clot. This observation was made many times and was the same on each occasion. Blood count, red cells, two million; hemoglobin, fifty per cent; white cells, 8,000 neutrophils, eighty per cent; small lymphocytes, eight per cent, and large lymphocytes, twelve per cent. Wasserman negative. X-Ray of G. U. tract showed the left kidney a little larger than the right, otherwise being negative. On January 16, 1926, cystoscopic examination was made. Many large clots were washed from bladder. Bloody urine was seen spurting from left ureteral opening. Both ureters catheterized. Specimen from right kidney was negative. The specimen from left looked like bright red blood. Microscopical examination showed only red blood cells. Function test showed twenty per cent of dye coming from right side in sixteen minutes. No reading could be made from left side on account of the blood.

Blood transfusion January 17, 1926. 450 c.c. citrated blood given. No reaction followed.

Nephrectomy, left kidney, done January 18, 1926.

Pathological report: Kidney was about one-third larger than normal. A large clot was seen in one of the minor calices, at about the junction of the middle and upper thirds of the kidney. Hemorrhagic areas were seen here. Microscopical examination showed extravasation of blood and areas of infarction. No evidence of a renal tumor was found upon very careful examination. Convalescence was unusually good. Urine became clear on the second day and has remained so. No infection in wound. He left the hospital on February 5th. On April 22 blood count was: Red cells, four million; hemoglobin, seventy per

*Read before the Tennessee State Medical Association, Memphis, May 11, 12, 13, 1926.

cent; white cells, five thousand; differential, normal. Examination of urine negative. Last seen on May 6th. He is constantly getting stronger, and the only thing that is keeping him from working is the lack of a job.

Discussion: Nature of injury is unusual. We, of course, thought of the possibility of a fraud as a renal tumor might have been present. The final conclusion is that the injury caused the hematuria. The most interesting thing about the case is the amount of blood lost over a period of three and one-half months. Even then, by the aid of a blood transfusion and nephrectomy it was possible to restore him to health.

Case No. 2: E. D., white male, aged 19. Walked into Newell Clinic at 2:30 p.m., November 12, 1925, complaining that "a lathe threw a file into my stomach." Accident occurred at 2 p.m. Physical examination revealed a well-developed and nourished white male, in decided pain and some shock. He is rather pale. Pulse is ninety and is soft and easily compressible. Temperature ninety-nine. There is an irregular puncture wound to left and a little above umbilicus. Patient put to bed with electric pad on abdomen. Given one grain codeine for pain. Nothing given by mouth.

Careful observation showed that an exploratory laparotomy was necessary. Pulse 110 at 6 p.m. Operation begun at 6:30. Incision made to outer border of left rectus. Upon opening the peritoneum the entire abdominal cavity was found filled with fresh clots, and there was a most active hemorrhage. As quickly as possible, with large sponges, the blood clots were removed. The field was so bloody that it was extremely hard to make explorations to find the source of the bleeding. No wound of the mesenteric vessels could be found. Finally upon grasping the left renal pedicle between fingers the hemorrhage was controlled. Posterior peritoneum incised. Kidney was found torn completely across the middle portion. It was quickly removed. A stab wound was made in loin and a soft rubber drain was put in. Posterior peritoneum and abdominal wound closed without drainage.

Convalescence was stormy for a few days, but patient left hospital on December 19th in a very good condition. Subsequent examinations have shown urine negative. Patient is in excellent health and is now attending a business college.

Discussion: It is very necessary to carefully observe every abdominal wound. The one in question was most insignificant. It had closed entirely. In opening an abdomen for such an injury the surgeon must be prepared to meet any emergency that may arise. Cabot states that the renal injuries with external or open wounds are comparatively rare. Only about 100 cases of incised or stab wound injuries of the kidney are on record.

Case No. 3: E. L., male, age 17. Came to the hospital at 3 p.m. on October 26, 1923, complaining of pain in right side just below posterior costal margin. He was nauseated and had vomited several times. Pulse, fifty-four; temperature, ninety-six. Skin cold and moist and patient feels very weak. Patient was playing football. While cutting a man down he received the full blow in the right side of the opposing player's knee. He was immediately brought to the hospital. He was given hypodermic of morphine and put to bed with electric pad to right kidney region. There was a discoloration over right kidney. X-ray was negative for fracture of ribs. The right kidney was shown to be much larger than the left. The lower pole was just above the crest of the ileum. Urine filled with fresh blood. On October 27, 1923, blood count showed: Red cells, 4,500,000; Hemoglobin, eighty-five per cent; white cells, 16,250; differential, eighty-five per cent neutrophils; eleven small lymphocytes, two large lymphocytes. Urine was about the same as on the day before. Patient still suffering so much that it was necessary to give hypodermics of morphine. Blood count and urine about the same. Temperature went to one hundred. Abdomen rigid and distended. By the thirtieth he was more comfortable. Urine became light chocolate color. Blood count on November 3rd was: Red cells, 4,000,000; Hemoglobin, eighty per cent; white cells, 10,000; differential, normal. General condition was improved, but patient looked sick. Distension much less. Large mass palpable below right costal margin.

Cystoscopic examination done on November 7, 1923. Blood clots washed from bladder. Right ureteral orifice injected and edematous. Left ureteral opening normal. Both ureters catheterized. Specimen from left side negative. The drop from the right side was continuous, and specimen was of pinkish brown color. Examination of it showed a heavy trace of albumen, two pus, and a great many broken down red blood cells. One c.c. phenolsulphonephthalein injected intravenously. The dye appeared from the left side in five minutes. No dye came from the right side. Twenty per cent was collected from the left side in fifteen minutes. This showed that the left kidney was performing more than the normal function.

Conclusion: The right kidney had been irreparably injured and was not functioning.

Nephrectomy done on right kidney on November 8, 1923. Many adhesions had formed, so great difficulty was encountered in removing the kidney. An opening made in peritoneum was sutured. Wound closed, drain being inserted.

Pathological report: Kidney was about three times the normal size and showed that the entire kidney substance had been severely contused. The rupture was on the posterior surface and extended through the entire wall of the kidney. About one-half pint of old blood clot and serum were removed from the pelvis. Patient discharged from hospital on December 1st. There had been a great deal of serum drainage from the wound, but there was never any suppuration.

The urine was entirely negative by the third day after operation and has remained so. Patient is in excellent health.

Discussion: The nature of the injury is interesting in this case. Operation could

have been performed earlier, but nothing was lost in waiting. The cystoscopic examination was of aid in showing the exact condition of each kidney. I do not think a nephrectomy should ever be performed unless one is certain of the presence of the opposite kidney.

DISCUSSION ON PAPERS OF DRS. SPINGARN AND CAMPBELL

JOSEPH H. SMITH, Memphis: The subject of polycystic kidney is not an unusual one to come up before a urological society. We quite often run into these conditions, but at the same time they are not so unusual as to make them an uncommon occurrence to tax your ingenuity to decide what should be done for the patient. We have accepted the theory that polycystic kidney is congenital in origin. I think there is no doubt but what they are of congenital origin. Some authors have reported cases of polycystic kidney in the newborn that were of such magnitude that they obstructed delivery. The symptoms that follow polycystic kidney often do not come on until adult life, although the disease was present in early childhood. They are nearly always bilateral. There are very few instances reported in the literature where the condition is unilateral. Whether or not these cases are, can only be told by autopsy. I reported a case four years ago at the Southern Medical Association at Hot Springs, a polycystic kidney which was apparently confined to one side. This was in a man forty-eight years old who came into the hospital in a very septic condition, with profuse hematuria, and on pressure over the right kidney region a large mass was evident. He was in very bad condition. On the urological findings and the presence of tumor and hematuria I made a diagnosis of polycystic kidney. I gave him preliminary treatment and got him ready for operation. I removed a very large polycystic kidney, and the patient made an uneventful recovery. The last I heard from him was about two years ago when he was in apparently good health. I could not say that that man did not have a polycystic kidney on the other side, but there were no symptoms.

These polycystic kidneys are made up of numerous multiple cysts, some containing blood, others containing a slight sero-sanguinous fluid and still others a watery fluid and pus. The diagnosis, of course, is made on the urological findings; a large amount of pus in the urine and hematuria, badly impaired function on the tumor side, deranged pelvis of the kidney as shown on the pyelogram, with albuminuria and pressure symptoms that are always present in tumors of the kidney.

What to do with a bilateral polycystic kidney is something that will tax your knowledge. Of course if the patient has a very large tumor that is impairing respiration and the digestive system and his function on the other side is of such extent that you think he will be enabled to carry out kidney function from the kidney that is left, no matter whether there is a polycystic kidney on the other side, I would remove the bad kidney. Some authorities do not agree on that.

DR. H. C. SCHMEISSER, Memphis: Polycystic kidney from the pathologist's standpoint is as interesting as it is from the clinician's point of view. I cannot say that polycystic kidney is a rare finding. In our autopsy series one finds that they are not rare at all. I am not minimizing Dr. Spingarn's paper. I am taking the pathologist's view. They frequently occur bilaterally as has been stated. Dr. Herbert Barbee, of Memphis, had a case which came to autopsy and was sent out to the Pathologic Institute. Mr. Joseph Scianni has illustrated one. Dr. George R. Livermore has sent in some which will likely appear in the new Lewis Surgery.

The interesting thing about polycystic kidney is that we know so little about it. It is a very fruitful field for research. It should be carefully studied. We do not know much about it. The only thing we can confuse it with is a multilocular cystic tumor of the ovary. With careful study under the microscope you can make the diagnosis. Polycystic kidney is made up of innumerable little cysts. Under the microscope the interesting thing is the great amount of functioning kidney which is still present in the walls of the cyst. In the gross specimen you see no functioning tissue, but under the microscope there is a great deal, and we know that such a kidney functions. In this respect it would be in a class with the multicystic tumor or chocolate cyst of the ovary or the sytadenoma of the breast, the so-called Schimmelbusch's disease or chronic cystic mastitis. We always consider it as a malformation, as a congenital thing. The last theory presented by Dr. Spingarn was explained by the fact that the Wolffian body and duct did not unite and that we have a true retention cyst in each of these cavities and that the convoluted tubule receives urine and dilates.

DR. W. S. LAWRENCE, Memphis: I rise simply to compliment Dr. Spingarn for the careful method in which he has worked up this case and also to offer the possible explanation for the shadow in the right kidney of the case reported by him. The original films which I have seen were very much clearer than the slides projected on the screen. Now that doubtful shadow is a rather dark area, somewhat darker than the kidney substance itself would be, indicating that it

is less dense, and surrounding that there is a shell or ring like the formation of the opaque fluid. These cysts do not in general communicate with the calices, but I can imagine that this particular one was adjacent to one of the calices and that by pressure it had formed a communication with it, and that when the opaque fluid was injected a little of it went around the capsule of this cyst and that what he sees on the film is simply one of the cysts. They do not usually show on the x-ray film, but this one is surrounded by a thin area of opaque fluid, having a communication with the calyx. That would be my idea of the interpretation of that film.

DR. J. L. MORGAN, Memphis: I do not wish to say anything in regard to Dr. Spingarn's paper except to commend him on the way he handled the subject, because apparently everything that could be said has been said on the subject, but I would like to say something regarding Dr. Campbell's subject of traumatic rupture of the kidney as to the proper method of handling these cases.

We see these cases with hematuria, and we feel that the injury is to one or both kidneys. The next thing is to decide which kidney is involved and then what to do. I think probably these cases are operated on more frequently than they should be. I have seen several cases of traumatic rupture of the kidney, or at least a hematuria following an injury. If we make a pyelogram of these cases and do not find a rent, I believe operation should be deferred for a few hours or a few days because as a rule these cases will take care of themselves if the tear is such that it will not be revealed by pyelogram. It is true that the rupture could be of the cortex and not extend into the pelvis, and in such cases a pyelogram would not be an aid in diagnosis, but in these cases you have marked shock and possible tumefaction in flank corresponding with the kidney involved. I think the majority of these cases will take care of themselves very nicely if the rent in the kidney is not sufficient to be demonstrated in the pyelogram. If the dent is small, a nephrotomy will usually suffice. Of the cases I have seen, the majority of them responded to rest and medical treatment without surgery.

DR. M. G. SPINGARN, Memphis (closing his part of the discussion): I just wish to say a few words in conclusion that of the three theories which were given on polycystic kidney that the malformation theory is the one most accepted to date by pathologists. There are quite a number, especially Green, who do not accept that theory.

The next question comes, What are we going to do with these conditions? Treat them medically or by operation? In my limited experience

with this subject and after careful study of the literature, I have come to the conclusion that watchful waiting is the best. Some claim operative procedures, but I cannot see it, either removing or puncturing the cyst. As to lavage and drainage of the kidney pelvis, I cannot see very much in that and I am not doing it on this case. Apparently he has hemorrhage; he had one just a short time ago, about ten days, making his third hemorrhage. It lasted about five days. I simply placed him in bed and gave him serum. The hemorrhage subsided, and today he is on his feet, working and feeling fine and looking fine.

I want to thank Dr. Lawrence for the facts that he gave in regard to that shadow. That shadow has been a puzzle to me. I have been absolutely unable to interpret it with any satisfaction. As this case is not in a notion to come to operation, it may be that in time a postmortem will show what the exact status is.

DR. EARL R. CAMPBELL, Chattanooga (closing his part of the discussion): I would like to say a word or two in regard to Dr. Spingarn's paper and report very briefly a case I had.

A boy came in with an enormous abdominal tumor. The statement that the doctor gave just now regarding the use of the pyelogram is applicable in this case. I had nothing on which to make a diagnosis except the presence of this large tumor. If it had been a female, I would have made a diagnosis of an ovarian tumor. Cystoscopic examination showed a blocking of the kidney pelvis and the roentgenograms showed a faint shadow in the kidney pelvis. We worked on the case for several days and finally came to the conclusion that it must be a polycystic kidney. We made an abdominal incision and removed this mass, and it was a multilocular polycystic kidney with stone in the kidney pelvis, partly blocking the kidney. There was no kidney tissue left at all. There were absolutely no urinary symptoms at all. The other kidney was found to be normal at operation. The function of that kidney shown by cystoscopic examination was a little below normal. The patient stood the operation very well, had a pretty good convalescence and went back to active work. I have not heard from him for a year.

In reference to my paper, what the doctor said is absolutely true in the ordinary cases we have. We have those cases all the time, but in the case I reported as shown by the operation and as shown by examination before operation, operation was absolutely indicated and absolutely necessary to save the life of the patient. For instance, in Case No. 3 where there was bleeding for over three and one-half months, the kidney did not look very bad. As I said, microscopic examination of the kidney did not show anything

except one little area where there was lots of hemorrhage. In the case where the boy was injured while playing football operation was absolutely necessary. We kept him ten or fifteen days before operation trying to get by. I did

not do a pyelogram. The pyelogram of the case that bled for three and one-half months was negative. I did not do a pyelogram in the first case because I feared there had been a tear of the peritoneum, and I did not want to open up a new area in the abdominal cavity.

MILK INJECTIONS IN THE TREATMENT OF INFECTIONS OF THE FEMALE GENITAL TRACT*

PRELIMINARY REPORT OF TWENTY-TWO CASES

R. S. DUKE, M.D., Nashville

FOR the past twenty years there has been a steady increase in the use of various proteins in the treatment of acute infectious diseases and chronic inflammations. A wide variety of substances has been used with more or less gratifying results in different hands. Probably cow's milk has enjoyed a wider popularity than any other protein, undoubtedly because it is so readily available (1) and constant in protein content. The exact grade of milk or milk preparation to be used has been the subject of considerable discussion, and as yet is not settled, and until we know exactly what substance in the milk is responsible for its efficacy as a therapeutic measure, the various preparations will all have their advocates. The reaction following the injection of any of the forms of milk used has been a constant factor in varying degrees, but what causes the reaction? Bacterial toxins, native milk proteins, or decomposition products?

In this short series of cases we have been using pasteurized hospital milk with a bacterial count varying from 90,000 to 500,000 per cu. cm. This milk, though pasteurized, is loose milk and kept in ice boxes at a temperature about fifty degrees F. This milk is not sterilized before injecting, but is centrifugated and the milk drawn up into the syringe with the needle well below the cream line (2).

All injections were made in the gluteal muscles and the patients have experienced only a temporary discomfort or soreness. There were no instances of abscess formation at the site of injections.

The initial dose was five c.c. in every case, which was increased to seven c.c. on the second dose and the maximum of ten c.c. was reached on the third dose. The interval between doses was three days.

In this series of twenty-two cases the total number of injections was seventy-one, making the average number about three. The greatest number given to a single patient was thirteen.

The general reaction was noticed in nearly all of these cases from eight to twelve hours following the injection. In only a very few instances was there any chill. Thirteen patients showed an elevation of temperature, but in just one or two cases did it rise about 101 degrees F. Nearly all of them complained of a general malaise, headache, aching in the back and loss of appetite. After about twenty-four hours this was followed by the euphoria, which has been consistently noted by all observers.

We had several patients who complained of increased pain in the infected areas, but this focal reaction subsided in a few hours. Also, the cases which had focal reactions were patients with positive gonorrheal infections. Two cases of arthritis in patients with positive smears from the cervix, complained bitterly of increased pain

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in the affected joints, which was of short duration, and after four injections both of these patients had normal motion in the joints involved and an entire absence of pain.

The increase in leukocytes following the injections was not nearly as great as has been reported by Petersen (3), for the average W. B. C. twenty-four hours after the milk injection—in those who showed any increase at all—was only from 11,000 to 15,000. Two cases had a hyperleukocytosis of 20,000 to 25,000, which was the average count in the cases reviewed by Gellhorn (4) in his admirable article. Six of our cases showed no increase in leukocytes. While those who experienced the greatest reaction seemed to respond more rapidly to the treatment, some of our best results were obtained in patients who showed no reaction or only a mild reaction.

Eleven patients had positive cervical smears, and eleven were negative; also eleven patients had palpable adnexal tumors. Nineteen cases showed marked symptomatic improvement, and three were not influenced at all by the treatment, one of whom received thirteen injections of milk. Two of the three failures were operated upon and one left the hospital unimproved.

In order to prevent reinfection all cases having a positive smear from the cervix received a one-hour hot douche once daily and the endocervix was cauterized with the actual cautery at least once during their period of hospitalization. In addition to the above routine five per cent mercurochrome was applied to the cervix and vaginal vault twice a week.

One case not included in this series on whom milk injections were tried is worthy of mention. A negro woman, age seventy, came into the hospital with a marked enlargement of the abdomen. She had been tapped by a negro doctor and a greenish yellow apple jelly like fluid obtained. A diagnosis of cyst-adenoma pseudomucinosum was made and she was operated upon. The peritoneal cavity was filled with this jelly like fluid which had escaped from the puncture wound. The cyst was removed,

but a great deal of the fluid could not be evacuated. About a week after operation milk injections were begun and after four injections had been given there was no clinical evidence of any fluid in her peritoneal cavity. At the present time, five months after operation, she is well and has no reaccumulation of fluid in her peritoneal cavity.

We have made no attempt to draw any conclusions from so few cases, either to advocate or condemn the use of milk injections, but we feel that the marked improvement shown in the majority of our cases at least justifies further study.

(1) Schmidt, R.: Ueber Proteinkoerpertherapia und ueber parenterale Zuguhr von Milch, Med. Klinik, 1916, xii, 171.

(2) Graves, R. D.: Journal A. M. A., Vol. 83, 1505.

(3) Petersen, W. F.: Protein Therapy and Non-specific Resistance, New York, Macmillan, 1922.

(4) Gellhorn, George: Milk injections in Gynecology and Obstetrics, American Journal of Obstetrics and Gynecology, November, 1924.

DISCUSSION

DR. L. E. BURCH, Nashville: Dr. Duke has endeavored to present to this Society a fair review of twenty-two cases that have been treated in the Vanderbilt Hospital by injection of milk in the first five months of its existence. I think he has been perfectly fair, and I want all of you to understand that neither Dr. Duke nor I nor any member of the staff is sold on the question of milk. We do not believe it is the only remedy for the treatment of acute pelvic infection. I have been impressed on looking over my past experience the number of cases of acute pelvic infection that get well and remain well under palliative treatment. I believe that I can say that ninety per cent of the acute cases of pelvic infection in the initial attack will get well under palliative treatment. I have also observed in cases that I have operated on, either draining a pelvic abscess and then going back into the abdomen years afterwards for a fibroid to find the mass entirely disappeared and not a sign of adhesions. I have always felt that one of the greatest crimes we as surgeons and gynecologists are guilty of is the removal of tubes and ovaries that is being carried out on young women throughout the country. Gonorrhea in the female is almost the same as in the male except this one difference so far as the anatomy is concerned: in the male there is no direct opening in the peritoneal cavity; in the female there is. Nature fortunately closes in the majority of cases the opening in

the peritoneal cavity in the female. In the male we do not remove the testicle or prostate or seminal vesicles for gonorrhea, and why should we in the female remove the organs of generation?

I want to say that this is merely a preliminary report. At the Vanderbilt Hospital I do not believe there have been more than two or three cases at most that have been operated on for pelvic infection. The cases that have been treated there have had a pretty careful follow-up system, and as far as we have been able to find out they have not been operated in other clinics. Now understand, all our cases have not been a success. We use milk, but do not depend entirely on milk. Milk will have no effect on an inflammation of Skene's duct. It will have no effect on a diseased Bartholin gland; it has no effect on cervicitis or endocervicitis. Two cases that I do not believe were reported here were sent to us from the medical service of Dr. Canby Robinson. They were cases of acute gonorrheal rheumatism, one with a positive smear and the other not. The injection of milk was almost miraculous. In two days' time the joint trouble was much improved.

We are using the milk as Dr. Duke prescribed. We are also using cautery treatment for the cervix, and we are using hot douches. At the present time we are using diathermy and also topical applications. There was quite a striking case of a little girl of eighteen years where the milk had absolutely no effect. We carried her along and carried her along and could not do a thing. That patient was operated on by our president, Dr. Dixon. It was necessary in that case to remove both tubes and ovaries. Fortunately, Dr. Dixon grafted one of the ovaries. I saw her at clinic the other day, and she told me that menstruation had returned.

I want to say this in conclusion, that the milk treatment will not produce an abscess or at least has not so far. In the majority of cases the immediate effect—and you ought to get an immediate effect if you get any result—is a sense of well-being, and in quite a large number of cases the masses will disappear, in others the masses remain stationary, but the patient is clinically well. We have two cases like that now that we are keeping under observation. I do not know what the outcome will be. Whether milk is the best remedy, whether typhoid vaccine is the best, or whether it is better to use a diphtheritic antitoxin, remains to be found out. The results with aloin have not been satisfactory. I do believe as far as we have gone that milk is an excellent therapeutic measure in an acute pelvic infection. It is well worth trying, and it will prevent a large number of these cases from coming to the operating table.

DR. W. T. BLACK, Memphis: It was Schmidt, in 1916, who first introduced the use of milk in-

jections in infections. I have used milk in infections such as furunculosis for several years. For the last two years, since hearing the paper by Dr. Gellhorn at the Hot Springs meeting of the American Gynecological Association, I have used it in at least one hundred cases. To state just what effect I am getting from milk injections would be difficult. At times I think we are getting good results, and again we find that we are not getting results at all. Some of the patients will have quite a reaction, chill and quite a high temperature, and no doubt this is the class of cases in which you get the best results. The more the reaction, the better the results. It is evidently a proven fact that this protein injection does stimulate these broken-down or worn-out cells and increases leucocytosis. In Ehrenfest's translation of Koehler's book on puerperal infections he states that "in some cases nothing seems to do any good."

Regarding the statement made by Dr. Burch about unnecessary operations, I do not think any of us are operating on acute salpingitis any more. Too many acute neisserian infections in the pelvis clear up to operate in the acute stage. If an acute abdomen is opened and you find an acute neisserian infection of the tubes, when you expected an acute appendicitis, for example, do not remove the tubes, for they usually clear up. I have had experience of this kind in two or three young girls. The tubes were left and no bad effects followed.

DR. J. M. MAURY, Memphis: I have some hesitancy in making any remarks on this subject because my experience has been rather limited—probably a few more than Dr. Duke has reported. I have not made a close analysis of the results, but my impression is that I have not seen milk do any good in these cases. So far as my experience goes, I have not been able to determine in my own mind that it has any beneficial effect. Practically all of these cases undergo resolution without milk or anything else if you just give them a little time, and I am not of the opinion that the administration of milk lessens the time. In using milk you are doing something which has a good psychological effect and at the same time you are giving the patient time to get well.

DR. CARL C. CRUTCHFIELD, Nashville: Pretends, for which the good results of milk are responsible, have been used for some time in the treatment of various things in connection with disordered pathology. They have been especially used in acute gonorrheal epididymitis. Since 1916 I have treated about thirty-five or more cases of acute epididymitis with injections of typhoid vaccine intravenously. All of these were seen before an abscess formed. In not any of these cases did an abscess form or was operation necessary. I have treated four cases of acute

pus tubes with aloin. I give it daily—five c.c. for the initial dose and ten c.c. for the succeeding doses. In forty-eight hours as a rule the pain was lessened, and when combined with the ordinary methods of treatment, rest and fluids, seemed to shorten the period of morbidity. One of the patients had a persistent mass in the right side with recurrent colics. I found that the appendix was bad. This was removed, and it was necessary also to remove one tube, but the other tube looked healthy, and as the patient was a young woman we left it in. One other case that I saw some five weeks after the initial attack of salpingitis because of economic reasons she wished it cleared up as soon as possible. We placed her on aloin treatment for a month. The mass decreased in size, but as the patient was anxious

for an early cure, I opened the abdomen, and much to my surprise the tubes were almost normal, so much so that nothing was done except to remove the appendix. I believe that aloin, though it does not give the violent reaction that we get from typhoid vaccine intravenously, is as efficacious as milk and certainly more easily handled.

DR. R. S. DUKE, Nashville (closing the discussion): In some of these clinic patients there is an economic problem to consider and a long period of hospitalization is quite a factor. One of the doctors said in discussion that he did not know whether milk injections would be more than a palliative measure. I do not know that they will ever cure pelvic infection, but they will shorten a patient's period of stay in bed during an acute attack, and consequently I believe they are worth trying.

(NEUROLOGICAL COMPLICATIONS OF MASTOID DISEASE*

FREDERICK E. HASTY, Nashville)

NEUROLOGICAL complications in mastoid disease have been encountered rather frequently in recent years. A number of cases of facial paralysis complicating acute mastoiditis have been reported. I wish briefly to report two such cases.

Mrs. E. K., age 42, developed an acute otitis media; a myringotomy was done under gas three days later; six days later a definite facial nerve involvement was evident. A complete simple mastoidectomy was done on the tenth day of the illness. The paralysis was more marked on the day following the operation, but had entirely disappeared on the tenth day after the operation. The blood Wassermann was negative.

Case No. 2: Mr. John W. C., age 40, came to me complaining of facial paralysis of three days' duration and severe unilateral headache. History: Three weeks before he had had a light attack of influenza; about the third day he complained of fullness in the right ear, but not much pain. Hearing was impaired, rest at night was disturbed by a feeling of pressure and fullness in the right ear. This gradually grew worse for about ten days when the patient was seized with severe pain in the region of the ear and mastoid and a facial paralysis developed during the night. The family physician was called and a diagnosis of cerebral hemorrhage was made. This was based upon the fact that the patient had a slight hypertension and that he had done some heavy

lifting on the previous day while installing some farm machinery. A neurologist was consulted, and a well-developed mastoiditis was discovered. The patient was advised to have a mastoidectomy at once. At operation the lateral sinus was found to be exposed from the knee to the bulb. There was extensive destruction in the region of the antrum, the drum was of a dark red color, thickened, was pushed out but not bulging. The facial paralysis was less marked twenty-four hours after the operation and had entirely cleared up by the ninth day.

(Some one has said that in acute mastoiditis, a facial paralysis is a relative indication for operation, in chronic cases, an absolute indication. I would say that if facial paralysis develops in mastoid disease it is an indication that prompt and complete surgery be done regardless of whether it is an acute or chronic mastoiditis. In acute mastoiditis, it would seem that the nerve involvement is due to an edema of the nerve caused by absorption from the destructive process. This idea is well borne out clinically by the prompt relief of symptoms after a complete mastoidectomy. The nerve complications in chronic mastoiditis frequently do not respond so promptly, but here again the most thorough surgery possible is indicated.)

Mr. W. F., age 32, came complaining of con-

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stant discharge from the right ear since a partial simple mastoidectomy had been done some five years previously. At operation a cholesteatomatous degeneration was found to have exposed the lateral sinus, jugular bulb and jaw joint. Also the facial nerve was exposed for one-half inch external to the lateral semi-circular canal. At operation all of the structures were carefully exposed back to beyond the margin of normal bone. The bone was removed from around the facial nerve with a Richard's curette. The granulations and deposits about the nerve were not disturbed, but all the diseased bone was removed. There was no evidence of facial paralysis for some six or eight hours after the operation, but there was a complete facial paralysis by the third day. There was little or no improvement for three months, but there was almost normal function of facial muscles in five months, and no evidence of facial paralysis after the sixth month. It has been five years since the operation, and the patient has had no trouble.

It should be remembered that in chronic mastoiditis there may be extensive destruction of the bone adjacent to the facial nerve with little or no disturbance in the function of the nerve. It seems that nature reinforces the nerve sheath as the bone is being slowly destroyed. All diseased bone should be carefully removed but protective structures, such as granulations, had best be left alone. The following cases will further illustrate this point:

Mrs. S. P., aged 26, had had a discharge from the right ear for many years. One week before operation she developed a partial facial paralysis. This was due to a cholesteatomatous degeneration that outlined the labyrinthine capsule and the bony wall of the facial canal for some distance internal to the lateral semi-circular canal. The diseased bone was completely removed from both sides of a small mass of granulations. The paralysis was less marked on the second day and had entirely disappeared on the eighth day. After four years the patient has had no trouble.

Mr. B. P. W., age 48, complained of more or less discharge from the left ear for forty-four years. Recently there had been considerable labyrinthine disturbance. At operation a cholesteatomatous degeneration was found to have outlined the semi-circular canals, to have exposed the dura of the middle fossa and the jugular bulb and to have extensively destroyed the posterior bony canal wall. All structures were exposed to beyond the margin of normal bone. The morning following the operation there was a partial paralysis involving the lower part of the face. This cleared up within ten days.

Miss M. W., age 36, complained of constant discharge from the right ear since early childhood. She had been under my observation for more than a year, but after having an attack of influenza, she complained of pain in the right side of the tongue when a mop was placed in the posterior tympanic region. At operation the bone adjacent to the anterior portion of the superior semi-circular canal was found to be badly diseased. The dura was widely exposed in this re-

gion. For several days following the operation there was a noticeable impairment in the muscles of expression. This cleared up by the end of the second week. It should be stated that there was a comparatively small area of pathology and that it was the location of the disease rather than its extensiveness that was about to make mischief.

INVOLVEMENT OF THE EIGHTH OR AUDITORY NERVE IN ACUTE MASTOIDITIS

The hearing is promptly impaired in acute inflammations of the middle ear, due, it seems, to disturbances in the transmitting apparatus. The labyrinthine division is not frequently involved in the acute infections of the ear, but when the semi-circular canals are invaded by the extension of infection from the tympanic cavity, nature is usually taxed to the limit to hold the process within the capsule and to prevent a rapid development of generalized meningitis. I recall the important points in the history of a man some twenty-five years of age who had been discharged from the aviation corps only a few months before he applied for treatment and who was still doing some flying. A few hours after he had been swimming, he developed a severe pain in the ear. I saw him six hours later when the drum was very much inflamed and was bulging almost to the point of rupture. The patient complained of vertigo and there was some spontaneous nystagmus. A wide myringotomy was done under gas. The serosanguineous drainage continued until the time of death, thirty-six hours later. Some eighteen hours after the myringotomy there was a marked spontaneous nystagmus, he was vomiting and the temperature was rising rapidly. Two hours later I was called to give orders for a restraining jacket. At this time the spinal fluid was turbid and the patient promptly died of a generalized meningitis. It should be remembered that there was positive evidence of labyrinthitis in this case before a myringotomy was done.

One is occasionally called upon to make a differential diagnosis on rather meager evidence regarding labyrinthine disturbance.

Case No. 1: Mrs. A. M., age 42, was suddenly seized with vertigo and vomiting. She was unable to turn her head in bed without getting

deathly sick. A diagnosis of Meniere's disturbances was decided upon by the attending physician. I saw the patient forty-eight hours later. The ear drum was bulging and was slightly inflamed. Upon interrogation I learned that the attack was precipitated by a suppressed sneeze. Puncture of the ear drum promptly gave great relief. The patient left the hospital within thirty-six hours. She has since had a somewhat similar experience upon two or three occasions following a heavy sneeze.

Case No. 2: Mrs. J. W. M., age 24, first noticed a sense of fullness in the right ear. A few hours later there was slight pain, and within twelve hours from the onset marked vertigo and vomiting. The patient soon learned to assume a very definite position with the affected ear to the pillow, and in this position she was fairly comfortable. The patient extended her head over the side of the bed, and I looked upward to make the examination. The ear drum was bulging and was very slightly red. A paracentesis allowed a few drops of fluid to escape with some gas or air. This gave relief to the extent of allowing the patient to take nourishment. She was able to change position of the head slightly each day. At the end of one week she was able to lie flat on her back.

LABYRINTHITIS DUE TO DISLOCATING THE STAPES

The opening of an ear drum is not without risk of dislocating the stapes. This accident may be promptly followed by symptoms of disturbance in the labyrinthine system or there may be a little evidence of trouble for some two or three weeks, as I shall demonstrate a little later.

Case No. 1: A woman came to the hospital complaining of cerumen in the ear. The attending nurse irrigated the ear with a rather long, small-tipped metal syringe. The patient moved and forced the tip of the syringe into the middle ear cavity and ruptured the ear drum and did other traumatism that immediately set up labyrinthine disturbance and infection in the middle ear. The patient was unable to walk for several months and was finally left with a deaf ear, and I really think a non-functioning labyrinth. There was a legal aspect to the case which suppressed information as to the final condition of the labyrinth.

Case No. 2: A woman came complaining of earache. A myringotomy was done under gas. Upon awakening the patient was unable to walk alone. Three weeks' rest in bed gave complete relief from the labyrinthine disturbance. The patient retained good function in both divisions of the eighth nerve. I observed a similar case that promptly developed a pyogenic labyrinthitis which was followed by a meningitis. The patient died in less than a week.

Case No. 3: An untrained assistant, while sponging the middle ear in a radical mastoidectomy, dislocated the stapes without ever knowing what had happened. The surgeon observed the accident at the time, but did not mention the matter to the assistant. The patient seemed to be doing nicely for some ten or fifteen days when he began to complain of basilar headache on the

side that had been operated upon. Vertigo developed promptly, and almost exactly three days from the time of the first headache the patient was seized with a most severe pain in the same side of the head and within less than an hour was unconscious and died within twenty-four hours. At postmortem a purulent labyrinthitis was found to have extended throughout the labyrinthine system into the cochlea and to the middle cranial fossa through the internal auditory canal. The stapes was missing and the oval window was open. I wonder if it would not be shocking for us to know how many cases of labyrinthitis and meningitis are really due to our accidents in opening ear drums and radical mastoid surgery? I should like to suggest that an assistant who is not well aware of the damages that can be done with a sponge be not allowed to put an instrument in the middle ear in a radical mastoidectomy.

FUNCTIONAL TEST

The function of the labyrinth should be known in every case where a radical mastoidectomy is contemplated. It is not unusual for a patient to come seeking relief for a discharging ear after he has been under treatment of different otologists for a number of years and all too frequently such patients are unable to give a history that can be relied upon as to what labyrinthine disturbances they have experienced. The following case will illustrate the point:

Mr. S., age 35, came to the hospital during a severe exacerbation of an old chronic mastoiditis. The man was very sick, and the surgeon not feeling justified in attempting a complete functional test, did a radical mastoidectomy without first obtaining as much information as one might desire. The post-operative period was satisfactory until about the end of the second week, when the patient began to complain of severe headache on the affected side. He was up and about when he was seized with a severe headache and promptly became unconscious and died within an hour. At post-mortem the external semi-circular canal was found to be open. The vestibule was of the typical canary yellow that is found in chronic infections of the labyrinth. There was an abscess on top of the petros bone that had been well walled off. I think the original infection had traveled from the external semi-circular canal through the labyrinth, through the ductus endolymphaticus to the saccus endolymphaticus and that the meninges had from time to time walled off the infection. The abscess finally ruptured and the patient died a respiratory death.

CONCLUSIONS

1. Involvement of the seventh or facial nerve in mastoiditis, acute or chronic, demands immediate and thorough surgery.

2. In acute mastoiditis the facial nerve involvement is due to edema of the nerve sheath.

3. In chronic mastoid disease there may be considerable pathology adjacent to the nerve causing but little or no disturbance in the function of the nerve.

4. Traumatism to the static labyrinth may or may not be promptly followed by signs and symptoms of infection.

5. The function of the labyrinth should be known in every case where a radical mastoidectomy is contemplated.

(DISCUSSION)

(DR. C. D. BLASSINGAME, Memphis: I wish to thank Dr. Hasty for presenting to us a very valuable paper on a most interesting subject. He has had a splendid collection of cases, and his observations on them have been very instructive to us.

The point that he makes in regard to exposure of the seventh nerve by destruction of bone tissue in chronic mastoiditis, without producing facial paralysis, is most interesting. Also that we encounter facial paralysis in acute cases of mastoiditis and in those cases where injury is done to the nerve at operation is likewise an interesting observation.

I have to add to the list of facial paralysis coming on in acute mastoiditis one case, that of a girl twelve years of age, giving a history of an acute process in the ear for three weeks, followed ten days after onset by increased symptoms and the onset of facial paralysis of a marked degree. At operation we found it necessary to remove the antro-tympanic bridge because of involvement of the bone forming it. The paralysis cleared up within a week.

I have not encountered a case of facial paralysis coming on in chronic mastoiditis that was not due to some surgical attempt to relieve the disease. The fact that a surgeon does sometimes get a partial facial paralysis following a few hours after operation does not necessarily disparage his work. To the contrary, to be able to remove diseased bone to the extent that a partial facial paralysis results without doing permanent injury to the nerve bespeaks a most thorough surgical technic.

I have seen one case of meningitis developing from an acute primary otitis media and secondary mastoiditis, following measles. Operation was refused until meningitis set in.

I hesitate to discuss the point of labyrinthitis due to dislocation of the stapes, in the process of myringotomy. That unfortunate occurrence might happen to any of us. I think the two important factors in avoiding this catastrophe are the point at which the tympanum is entered and the shape of the scalpel used.

(In regard to meningitis and labyrinthitis following accidents incident to mastoid operations, it has been estimated that about ninety per cent of these complications, resulting from the operation alone, are due to trauma of the dura at the time of operation.

In conclusion I wish to call attention to a group of cases of neurological complications of mastoid disease which I believe Dr. Hasty has not mentioned—namely, of the eighth and other cranial nerve branches in chronic mastoiditis of the sclerosing osteitis type. This condition is usually found in patients past middle life who give a history of ear trouble in childhood which never entirely cleared up. I have had several cases of true vertigo in which nothing could be found to account for this symptom except a demonstrable sclerosing osteitis of the mastoid bone. Whether it is due to an encroachment of the sclerosing process upon the vestibular structures or to a toxic irritation of the vestibular nerve due to the inflammatory condition of the bone is not known. I will cite a case.

A lady, 65 years of age, has had rather severe vertigo with attacks dating back to 1918. Attacks have been severe for about four months. She staggers to the right. Turning test shows marked abnormal responses. There is a central pinpoint perforation in the right drum, and the posterior canal wall is considerably redder on that side than on the opposite. X-ray of the mastoid indicates a sclerosing osteitis of the right side. Another manifestation of this type of pathology is found in cases where pain about the ear is the predominating symptom.

About three months ago I did a mastoid operation on a patient whose only evidence of mastoid disease was pain and the x-ray picture indicative of sclerosing osteitis. The pain had lasted over a period of about ten months and was so severe as to incapacitate the patient. The ear drum was normal. At operation there was a mild grade of spongification and hyperemia throughout the mastoid cells. Since the operation there has been only mild pain lasting three or four days and the patient says it is not identical at all with the former pain.

DR. W. W. POTTER, Knoxville: Dr. Hasty reported some very interesting cases and stressed the importance of thorough operation in these cases. This is very important regardless of whether it is mild, acute or chronic infection. In this discussion I can only emphasize two points. These cases are fortunately relatively rare, but we have all seen a greater or lesser number of cases. Three years ago I saw a young man who had acute mastoiditis following influenza; one of the earliest symptoms of mastoid involvement was a facial paralysis. The paralysis cleared up after the ear began to discharge and was not present

when he consulted me. I had never seen a case of that kind before. A complete simple mastoidectomy was done, and he made good recovery.

I want to stress the point the doctor brought out in his paper relative to the ear drum and the care that should be exercised. A local anesthetic for this operation has always been very satisfactory, and I am convinced that every paracentesis operation should be done under local. We should all bear in mind the dangers of a discharging ear, whether in an acute or chronic infection, and we should warn our patients of these dangers.

DR. WILLIAM KENNON, Nashville: I am a great believer in sticking to the subject in discussion and in not bringing in subjects foreign to the discussion.

Dr. Hasty did not have in his paper a report as to paralysis of the external rectus in mastoiditis, the so-called Gradenigo syndrome. If it is permissible, I will discuss it. Every now and then you read in the literature reports of paralysis of the external rectus accompanying middle-ear disturbances, with pain in the temporoparietal region, as first described by Gradenigo in 1904. It is rare to hear of one man reporting more than one case. I have had the unusual experience of having seen three cases.

The first case was the first mastoid upon which I operated after starting in private practice. This girl had measles, followed by an acute middle-ear infection which went on to mastoiditis and was operated on. Nothing unusual was observed at operation. The mastoid was badly diseased. The convalescence following was perfectly normal for ten days and then she developed a diplopia due to a paralysis of the external rectus on the same side. After consultation, argument and prayer, because it was my first case, I operated again. I removed all the bone that one could with any degree of safety through the original mastoid wound and found absolutely nothing new and no destruction of bone at all. I sat back to watch my patient die, and she got well, much to my gratification and surprise.

The second case was a boy twelve years of age whom I saw in 1919. He had an acute middle ear following tonsillitis. The discharge had lasted for about ten days when he developed an acute, severe temporoparietal pain with paralysis of the external rectus of the same side occurring about two days later. He was sent to the hospital about two days after the development of this paralysis. When he was admitted to the hospital all examinations were negative, except that he had a slight discharge from the ear which had decreased materially in amount. The pain had decreased materially during the two days immediately before admission. I advised immediate operation when called in consultation. The family refused to accept this advice, as the boy seem-

ed to be getting better. X-ray of the mastoid was negative. I argued with the people that the mastoid should be opened. They refused, and he got well.

The third case I saw within the last two weeks. This patient developed bilateral acute otitis media and a paralysis of the abdomen on the side that was least involved. The x-ray showed very slight involvement of the mastoid on the side on which the paralysis occurred. The mastoid of the side of the paralysis showed only slight involvement.

My experience in these three cases is rather unusual. The explanation that is offered and accepted by most men is that this is a circumscribed pachymeningitis which occurs in the region of the sixth nerve where it pierces the dura and passes over the deep petrous bone through Darnanella canal, where it is in close proximity to the ganglion of the fifth nerve. It seems to me that more of these patients would die if that were the true explanation, though some of them do die, according to what I have been able to get out of the literature, principally the paper of Perkins which was published a good many years ago. The fact that I had one case to get well without involvement of the mastoid and the other case with very little involvement makes it appear that it is certainly, in some cases, a purely toxic condition.

DR. P. M. LEWIS, Memphis: I have one case that I think is of sufficient interest to add to this list of neurologic complications of mastoids. About the middle of last November I was called to see a white woman, thirty-eight years of age, who was suffering with pain in the right ear, dizziness, nausea and vomiting. She had had a chronic discharging right ear for a number of years, complicating scarlet fever or measles in infancy. Until two weeks previous to the time I first saw her she had never had any pain in this ear, headaches or any symptom indicating intracranial complications. When I saw her she was pretty comfortable as long as she was lying on the right side, but when she rose she had some disturbance. Examination: The drum membrane was practically destroyed, and there was a large amount of pus and granulations on the inner wall. The interesting neurologic part, which I could not explain, was that pressure over the mastoid tip caused vertigo, nausea and a rotatory nystagmus to the right. Even when lying perfectly quiet, pressure over the lower half of the mastoid and also down just below the tip, even though it was very light pressure, would cause a definite rotatory nystagmus and dizziness. She had no spontaneous nystagmus. Vomiting was not produced by the pressure. We thought she had a destruction of the mastoid cortex and a fistula leading directly to the labyrinth.

It was thought to be inadvisable to make turning or caloric tests.

We operated upon the patient the following day, doing a radical mastoidectomy, and found nothing in the cortex to account for the symptoms caused by pressure. Of course she had a sclerosed mastoid bone, but there was no breaking down in the mastoid. It was like ivory throughout. The antrum and the entire inner tympanic wall were covered with granulations, and there was some bony necrosis. A fistula of the horizontal semi-circular canal was found and the facial nerve throughout its entire horizontal course was exposed so that sponging in the middle ear produced a twitching of the face. We cleaned out the ear as thoroughly as we could, and she got along very nicely. One week later I put in a skin graft over the entire radical cavity. It "took" beautifully, and she required very little after treatment, being entirely well in about seven weeks.

One point of interest is that pressure over the stapes produced a bulging outwards of the external membranous semi-circular canal through the fistula in its bony wall.

Regarding the anesthetic used for myringotomy up until rather recently, I used nitrous oxide for all cases except very young children. A few whiffs of ethyl chloride was usually given them. For the past two years I have become convinced that the time-honored mixture of cocaine hydrochloride, menthol and phenol in equal parts furnishes a perfectly satisfactory local anesthetic. Dislocation of the stapes by the myringotome, as mentioned by Dr. Hasty, is produced by incising the drum membrane from above downwards, instead of from below upwards. This incorrect method of performing a myringotomy is still in use by a number of otologists, although it is very dangerous, and has been strongly condemned by the leading aural authorities.

DR. J. B. BLUE, Memphis: I wish to add a case of facial paralysis coming on during an attack of malignant scarlet fever about the eighth day and within forty-eight hours after the development of an acute otitis media. There was considerable Christian Science influence in this family, and it took some time for the full appreciation of the condition, but after four days of persistence of the paralysis the mastoid operation was done in the home. Within a few days after operation the paralysis began to clear. It is now fifteen days since the operation, and the paralysis has entirely cleared.

Referring to labyrinthine complications, I had a case of acute labyrinthitis following within twenty-four hours after the beginning of acute otitis media. I did a myringotomy under local anesthesia. She had no symptom of labyrinthine involvement until about eight hours after the incision of

the ear drum. She was kept in bed with ice bag to ear. No operation was done. She made a complete recovery, but the hearing in this ear was lost.

DR. H. E. CHRISTENBERY, Knoxville: Dr. Hasty mentioned some cases of Meniere's disease. About three years ago I was called one morning to see a lady about forty-five years of age who stated that she had awakened not feeling well and asked her husband to bring her a drink of water. When she rose up in bed she pitched to the right side. That case practically cleared up by opening the Eustachian tube.

About two weeks ago I saw a case that had been under observation for some five years for sinus infection. This woman had a chronic condition in the right Eustachian tube. She felt perfectly well, but while at the table she complained of dizziness and fell over. They called the family physician who thought she had ptomaine poisoning. She vomited for about thirty-six hours. I was then called in. She could not raise her head from the pillow. I had her removed to the infirmary where she had to be taken in an ambulance. Her condition cleared up after getting the Eustachian tube open and getting proper drainage and ventilation through that route.

DR. E. C. ELLETT, Memphis: I would like to say two things about Dr. Hasty's paper. One is an academic question. Two of the speakers have referred to sclerosing mastoiditis, which exists only in their imagination. What they are talking about is the infantile type of mastoid. The reason these patients have a chronic instead of an acute mastoid is because the mastoid is solid; they do not develop any pneumatic cells and therefore they cannot break down. There is no analogy in general pathology to what they call sclerosing mastoiditis.

The other point is regarding the Gradenigo syndrome. The first paper I read on the subject brought out the point that the Gradenigo syndrome is not an indication for operation.

DR. E. E. HASTY, Nashville (closing the discussion): I wish to thank the gentlemen for the liberal discussion. I am glad that the question of Gradenigo's syndrome was brought up. I should have dealt with it in the body of my paper if time had permitted. I have had two cases presenting this syndrome, both of which died of meningitis within a few days. I think that practically all of these cases are really suffering from a beginning meningitis somewhere along the track of the sixth nerve. This may or may not become generalized. It seems to me from our discussions here of this paper that we are justified in concluding that in recent years we have had to deal with an unusually high percentage of virulent infections in the mastoid, and I think we will perhaps find it necessary to do surgery in some cases earlier than has been our custom.

MIGRAINE*

L. CARL SANDERS, M.D., Memphis

IT is generally believed that migraine is an hereditary affection. It is characterized by paroxysmal attacks of pain, usually in the head, either unilateral or bilateral, but often occurs in other parts of the body and is as a rule associated with nausea and vomiting, disturbances in vision and occasionally is accompanied by psychic manifestations.

Many theories have been advanced to explain the actual cause of migraine. Among them may be mentioned:

1. Toxemia.
2. Endocrine dyscrasias.
3. Chronic fatigue.
4. Food idiosyncrasies.

Toxemia. Both endogenous and exogenous toxins are considered. The endogenous group comprise the various protein poisons from faulty metabolism and foci of infection. The exogenous group consist of the bacterial infections, narcotics and metallic poisons.

The endocrine dyscrasias are believed by some observers to be directly responsible for a certain type of migraine. Hyperactivity of the ovaries, thyroid and pituitary glands have been observed in migrainous subjects. The frequency with which migraine is associated with menstruation and the prompt cessation of the attacks during pregnancy or at the climacteric supports this view. The connection between migraine and overactivity of the thyroid and pituitary glands is not very clear. Some observers believe the heavy intake of food containing a high iodine and carbohydrate content produces a temporary increase in the thyroid or pituitary function which in turn precipitates an attack of migraine.

Headache due to fatigue exhaustion is

similar to migraine. Individuals suffering with migraine often have sick headache after unusual physical exertion. It is commonly observed that people leading a strenuous business or social life have a complete cessation of attacks of headache during a prolonged vacation.

Certain foods have produced attacks of migraine in some individuals. One of our patients could always induce an attack by an overindulgence in chocolate candy. Shell fish and strawberries are also given as possible exciting factors in patients with food idiosyncrasies. It is interesting to note that these three kinds of food are commonly the cause of urticaria.

None of these theories can explain the appearance of migraine in all patients. Quite a large number of sufferers are in perfect health otherwise and their diet and habits meet the normal requirements for good health. The real cause of migraine is evidently not the same in all cases.

Symptomatology: The symptoms like the causes vary widely with each patient. It is difficult to group the symptoms and make an accurate classification. The simplest method seems to be a discussion of the affection according to the location of the symptoms.

Prodromata: Frequently, without any known cause, the migrainous attack begins on awakening in the morning after a sound sleep. In other patients there is a feeling of drowsiness, or excitability, accompanied by flatulence and abdominal distress. Still others have an unusual feeling of well being, increased appetite and mental clearness before the attack. Visual disturbances are common. Scintillating zigzag rays of light across the peripheral field, black spots before the eyes, blurred vision or drawing sensation to the eyelids; disturbance of the sense of taste and smell, and numbness in

*Read before the Tennessee State Medical Association, Memphis, May 11, 12, 13, 1926.

one or more muscle groups with muscular weakness are common observations.

The Attack: With or without prodromata, the patient begins to suffer pain, usually in the head. The pain begins in one spot and gradually spreads, often involving one entire side of the head. It may be a boring pain, a sense of pressure or a severe throbbing pain synchronous with the heart beat. Vomiting often begins immediately after the pain and continues for hours, being a very distressing feature of the syndrome. Many patients are relieved by vomiting; others require an opiate; still others go to bed in a dark room and suffer for hours or even days. Any movement increases the pain. Photophobia is often present. Sleep, when possible, usually ends the attack.

Frequency of the Attack: This varies widely in different individuals. Many patients have periodic attacks occurring on the same day of the week or month. Those patients having attacks at menstruation rarely have severe pain between periods. The menopause in women and middle life in men commonly sees the end of migraine. Occasionally it lasts throughout life.

Location of the Pains Besides the unilateral or bilateral headache, various other types are encountered.

Ophthalmic Migraine is characterized by scintillating scotoma, hemiopia or severe pain in the eye ball. Often, however, the scotoma are present without the pain. This is spoken of as abortive migraine. This is the most common type and the duration of an attack is from two to twenty-four hours.

Ophthalmoplegic Type: The pain here is supraorbital and usually lasts several days before the onset of paralysis. There may be partial or complete ophthalmoplegia. There is ptosis with dilated pupil. This condition may last from a few weeks to many months. Fortunately this type is rare.

Abdominal crises due to migraine is occasionally reported in the literature. The abdominal pain is often very severe and lasts several hours, being followed by pro-

longed and continuous vomiting. The attack is usually preceded by intense headache, visual disturbances or aphasia. The history of these prodromal symptoms and the absence of physical signs usually makes the diagnosis possible.

Psychic Migraine: Moersch (1) has made an exhaustive study of these phenomena occurring in migrainous patients. The symptoms vary greatly and range from a mild vertigo to complete loss of consciousness. Headaches associated with nausea and vomiting practically always precede the psychic state. Aphasia, hemiplegia, nightmares, changes in personality, hallucinations and various sensory aura are met with in some of these cases.

Epilepsy and Migraine: In migraine as in epilepsy there is no demonstrable histological changes, but the symptomatology clearly suggests some disturbed function of the cerebral cortex. Many clinicians have observed the close relationship of these two conditions and find them occasionally present in the same individual. Migraine is distinguished from epilepsy of the minor form by the greater intensity and often unilateral limitation of the headache, by the slow, deliberate march of the migrainous aura often lasting several hours, and by the absence of unconsciousness and clonic movements. Abortive migraine in which the only symptom is the presence of scotomata and mild vertigo, has a marked resemblance to mild attacks of petit mal when there is loss of consciousness for only a few seconds and associated with slight clonic muscular contractions.

Differential Diagnosis: Migraine must be differentiated from headache due to brain tumor, syphilis, arterial sclerosis, sinusitis, intoxication and metabolic diseases. The history is of prime value. A careful physical examination is necessary in ruling out other diseases. A neurological study which includes the viewing of the eye grounds and a study of the spinal fluid is sometimes necessary, especially in the absence of prodromata and in cases with certain psychic symptoms. Unilateral or bilateral headache, which has definite pe-

riodicity which is preceded by the characteristic prodromata, or followed by nausea and vomiting, which has persisted over a period of many years in one who gives a definite hereditary influence, can safely be diagnosed migraine. There is nothing in the physical examination or laboratory findings which is characteristic of migraine. Entire dependence must be made upon the history and the absence of other pathological entities which simulate the pain of migraine.

Prognosis: The affection begins usually in childhood and abruptly ends at the mid life with few exceptions. No fatal case has been reported and so far as it is known it does not shorten life's expectancy.

Treatment: General measures. Attention to the general health is of prime importance. Eliminating foci of infection, correcting constipation, systematic exercise, regular vacations, avoidance of fatigue, and proper amount of sleep are essential.

Diet: A good wholesome well balanced diet is desirable. All foods which are not well tolerated should be avoided. Fresh vegetables, fruits, cereals, dairy products, tender meats and whole wheat bread should form the bulk of the diet. Shell fish, pork, highly seasoned foods and rich carbohydrates, especially candy, should not be taken.

Drugs: There are few drugs which have not been used in migraine. None are specific. The coal tar products, codiene, opium and cannabis indica are generally used with varying success. When nausea and vomiting are present, only those drugs which can be used hyperdermatically or by proctoclysis are indicated. Due to the favorable results from the use of luminal in epilepsy, some clinicians have used this drug in migraine. No complete reports are available, but there seems to be some promise of relief by its use in selected cases. One of our patients who has suffered frequent attacks for a quarter of a century has been entirely relieved for more than a year by the use of luminal and attention to diet and elimination. Others have reported a lessening in the intensity and the frequency

of the attacks. We have been using luminal in migraine for only two years and our series of cases is too small and incomplete to make any deductions as to its value at this time. Luminal to be efficient should be used in doses of one to two grains at the appearance of the prodromata and continued in the same dosage daily throughout the attack. Smaller doses of from one-half to one grain may be given at bedtime over a long period as a preventive. We hope later to make a more complete report on the use of this drug in migraine.

SUMMARY

1. Migraine is a condition of hereditary origin, characterized by periodic attacks of pain, usually in the head and preceded by certain prodromata in the majority of instances.

2. It usually begins in childhood and ends spontaneously at the fourth or fifth decade.

3. The treatment so far has been unsatisfactory. Luminal given before the onset of an attack may prove beneficial in certain selected cases.

Reference: 1. Moersch, Col. Papers, Mayo Clinic, 1923. Page 1101.

DISCUSSION.

DR. W. H. WITT, Nashville: Dr. Sanders has given us a wonderfully well-timed paper with reference to the supposed etiology of migraine, but particularly with reference to the clinical phenomena and with reference to matters of treatment.

It is not commonly brought out, I think, in quizzing a migrainous patient that immediately before the beginning of the attack there is very frequently a sense of well-being. The doctor called attention to that. But I think as a general thing that is a feature that is not recognized.

Often a patient will say, "I was feeling unusually well, and I ate unusually liberally, and the attack followed." You might draw the conclusion that the attack was due to overeating. It is just as common for him to say he felt unusually well and the attack followed without any eating in unusual amount. Now just why that is we really do not understand.

The doctor did well to call attention to the psychic phenomena that go with the attacks of migraine. That is another line of quizzing that is frequently overlooked. Also it results in a quicker diagnosis in the sense that the headaches which in a great many people are more or less

periodical without being typical migraine, would be absolutely established if the psychic features were brought out in the quizzing.

This is a disease in which the diagnosis is made by the history. There is hardly anything else that quite equals it unless it is a typical case of gall stone colic. We find nothing except what the patient has already told us, and we have to depend entirely on that.

Now, as to the matter of treatment: The treatment of migrainous headaches and the treatment of migraine is a very unprofitable exercise.

The doctor did well to call attention to the kind of food and all that. In four cases out of five I should say, no matter what we do to the patient in the way of feeding, his headaches are going to continue just about the same as they did before.

I do not wish to say there is not something very definite in strictly hygienic living and eating simply digested foods, but in the majority of cases, no matter how careful patients are about what they eat, the headaches are going to come back just the same.

The greatest mistake, I think, that is made in reference to the treatment of headaches is in the large number of operations that they are put through, semi-promising, if not actually promis-

ing them that they are going to get relief from their headaches.

Some of you know how often sinuses are opened up, how many teeth are drawn, how many nasal septa are straightened out. It may give relief, strange to say, for a few months, just like the simplest kind of operation, no matter where it is performed, whether a toe operation or circumcision, will stop attacks of epilepsy for a year or so. But, sooner or later, they come back. The same with headaches.

Let us get out of the habit of promising a case of migraine anything from any definite line of treatment. I believe in advising hygienic living. I think occasionally an entire change of occupation really comes nearer to producing permanent relief, except that which comes with age, than anything we can do.

Operative measures are fatuous. They may do good temporarily for some reason which I do not understand, but you cannot depend upon them having any permanent effect.

The tendency to stop after a certain age, whether a man or woman, is a well-established feature of the disease.

Occasionally I have seen people who developed what I took to be typical migrainous headaches around middle life, and continued beyond, but that is a very unusual occurrence.

ELECTRO-COAGULATION OF TONSILS*

EARL GOYER, M.D., Jackson

THE best definition I have seen of electro-coagulation is that of Dr. Elmer in the November, 1925, issue of the American Journal of Physical Therapy, which is as follows:

"Electro-coagulation or surgical diathermy is simply a cooking process obtained by placing an electrode on some part of the body distant of the part to be treated and a smaller electrode on the part to be destroyed; the passage of the current at the smaller electrode is so great as to generate heat sufficient to cook tissue cells; this not only occurs at point of surface but penetrates much deeper, the degree of penetration depending upon the current used, length of time applied and size of the electrode; this agent of destruction produces no shock or hemorrhage."

Quite a number of the ideas expressed in this paper and used in my coagulation were gotten from Tyler, Clark, Kolischer and Pfahler.

Coagulation is a heat generated in the tissues and extends to a much greater depth than cautery.

Before we can thoroughly coagulate any tissue we must destroy the water which it contains; this point should be remembered in injecting tissues with local anesthetic.

Two other factors of great importance in controlling the heat applied is the size of the indifferent electrode and its distance from the active electrode.

It is important that we have our inactive electrode large that we may give the needed amperage without skin irritation. I have found by using large electrode that makes perfect contact we avoid any irritation of skin.

Our active electrode will be an aluminum needle, insulated by rubber tubing, only exposing that part which will be passed into tonsil.

In selecting a handle for needle it should be one which has no metal parts exposed.

In tonsil work we want the intensity of our heat at the active electrode, which is our needle; this is accomplished by having the large inactive electrode and small active electrode.

Coagulation as often applied means only a surface destruction and this means failure every time in tonsil work. I make this mistake in the first few cases I coagulated and they all required a second coagulation.

The sooner we learn to pass this needle into tonsil the sooner we will become a believer in coagulation.

I recently read a short article by Hammon who brought this out in a way we can all appreciate.

Since our tonsillar tissue is highly vascular, if we should destroy the extreme ends of any of these blood vessels or tear down our capsule on the inside of the oral cavity and not get deep into the tissue, the first thing we do is to destroy the lumen in the ends of the blood vessels and the next thing that happens is to get a hyperemia in the deeper part of the blood vessel so the amount of fluid in the tonsillar tissue is immediately increased, and if the destruction of cells goes far enough in the superficial area to produce carbonization, we have interposed a barrier against our method and prevented the thing we desire to accomplish.

With that thought in our minds and with the knowledge of the circulation as it is, it must occur to you that our idea of a proper method of procedure is to cut off the blood supply in the base of the tonsillar tissue, first in order that the amount of

*Read before the Eye, Ear, Nose and Throat Section, Tennessee State Medical Association, Memphis, May 11, 12, 13, 1926.

fluid coming into the tissue may be immediately restricted.

If we produce a superficial carbonization we cannot go back behind this and cut off the balance of blood supply.

If we are to succeed in our coagulation of tonsil we must strike at the very root of the circulation of all of tonsillar tissue first.

We must have the confidence of our patient, as the slightest jump or movement of patient not only means intense pain, but may mean a bad burn.

I have coagulated tonsils by only spraying or swabbing tonsil with two per cent cocain or two per cent butyn, and had very little pain experienced by patient, but think it best in most instances to inject one per cent novocain in upper and lower pole of tonsil, then one injection about the center, giving this at least five minutes, during which time I arrange my large electrode; this I have tried a great many ways and am convinced the better plan is to have large electrode on patient's back, because here you can use large electrode with better contact than on other parts, and I am sure the electrode as used by many is entirely too small.

Now with the needle electrode we want to go deep into the tonsil, not merely touching surfact of tonsil, in order that the current coming from our indifferent electrode may first reach the point of blood supply.

Our current is turned on and needle allowed to remain just long enough to produce a grayish color around needle when our current is turned off.

This will often require a second or less time.

I usually treat three or four places on each tonsil, as I have found this better than trying to coagulate tonsil by treating in less places.

About the fourth or fifth day the tonsil will begin giving away and small pieces expectorated; in from ten days to two weeks all of tonsillar tissue should be gone. If you have remains of tonsil you will have to give further treatment.

I treat both tonsils, as I have never been

able to appreciate any advantage in treating other tonsil later. Where we treat both there is usually no marked reaction, and both tonsils treated is well tolerated.

Some advantages of this method:

First. Bloodless work, the dangers of hemorrhage are abolished, true bleeders can be operated with very little danger.

Second. Danger of infection is reduced, because the parts undergo sterilization by the heat and the lymphatics and blood vessels are sealed.

Third. Unnecessary to have patient in hospital and they lose no time from work or school.

Fourth. Little or no postoperative pain; patients able to take regular diet from time of coagulation until recovery.

Now, in closing, let me state that I do not consider coagulation a substitute for tonsillectomy in every case; in fact, I don't think it is scarcely ever the method of choice in children, especially in small children. It can be done if there is good reason for it.

I do think coagulation the method of choice in well selected cases.

It is good in those cases who have had one or two operations and still have small pieces of tonsil left, also in those cases who for some reason cannot or will not have tonsillectomy done.

I am sure most of us have seen those cases in which we could not select any method of removal by which we would feel sure of perfect results so far as removing the tonsil in its entirety, and in these cases I want to recommend coagulation to those who have not tried it.

Just select one of those cases we see occasionally in which we would do as good operation as the other fellow, but still we would rather let George do it, and try coagulation on him.

DISCUSSION.

DR. LOUIS LEVY, Memphis: Dr. Goyer started in by stealing my thunder. He says this should not be used as a routine method. I agree with him thoroughly. I think that is one of the reasons why x-ray men decided that it was not an ideal method for removing tonsils. I have not

had experience with the coagulation method. When the secretary called me up and asked me to discuss this paper, I told him I would be glad to listen and get what I could, but that I had had no experience with the method. I cannot see why we should substitute this type of work for operative work. Dr. Goyer said that it was painful unless the tonsil was injected. If you do that, you might as well do a tonsillectomy.

The question comes up, What about the capsule? I have never seen any of these cases. I would like to see what results you are going to get later on, as we found in x-ray work. I have operated on three cases that had x-ray treatments. The tonsils were brought down to the minimum, and still when we removed those tonsils we found they were infected. The same thing struck me regarding coagulation. Often we remove tonsils and behind the capsules we find pus pockets. In operating we are operating for the same cause—that is, to remove infection. If we do a coagulation operation on the tonsils and still leave a pocket of pus behind the capsule, we get no result. As I say, I am open to conviction. I would like to see some of these cases and see the results; then I would know how to regard the treatment.

DR. W. S. LAWRENCE, Memphis: Permit me to express my appreciation of being invited here to discuss this subject, not being a nose and throat man. I have enjoyed the doctor's paper and enjoyed being here. I intended this morning to get a pair of tonsils that had been removed and coagulate them to show you what the thing looks like, but I was unable to get any.

My attitude is also that of the two gentlemen who have just spoken—that it is a matter to be carried out on selected cases, though I think when the technic has been more thoroughly improved or rather when the improved technic is more thoroughly practiced, it may become more widespread, and for various reasons. The local reaction is very little, the work is very rapidly done. I believe it can be done by those who have been accustomed to it as quickly as Dr. McKinney can take out a pair of tonsils, which is five minutes. Dr. Henry Eaton Stewart, the author of several text books on physiotherapy from the New Haven School of Physiotherapy, has this to say: "That it is an office procedure and can be carried out under local anesthesia and has much to recommend it." Further he says: "We are often confronted with cases in which tonsillectomy is indicated, but where, because of the presence of toxemia from an acute condition, the tonsils must wait until the acute condition subsides before doing a surgical tonsillectomy." Now an acute inflammatory condition or even a suppurative condition is not a contraindication to electro-coag-

ulation, and it is not a contraindication for the reason that this method seals the blood vessels and the lymphatic vessels, so there is no chance of spreading the infection and making it systemic by removal of the tonsils by coagulation. Of course the tonsil is not removed at the time. It is thoroughly cooked, and when cold lies there as a foreign body, having no blood or lymphatic connection with the rest of the system. In that class of case the method appeals to me very much, and, as I said, it is simple and rapid and may in later years take the place of some of the more approved methods of removing tonsils.

If the work is thoroughly done, it can be carried back to go entirely through to the capsule and just as deep as the infection may be if you know how deep the infection is. About three years ago there appeared an article in the Journal of the American Medical Association, by Novak, in Chicago, in which he reported about one hundred cases done by this method. In the discussion it was brought out, and Dr. Novak was made to own up that the after-effects and the immediate reaction following the operation were rather severe—great pain, more than in the ordinary tonsillectomy, great swelling of the throat, and sometimes so severe as to occlude breathing. But all Novak's cases were done in the wrong way except one. He used a disk, active electrode. The active electrode, the one applied to the tonsil, should be a needle, inserted to one-fourth inch depth. That should be put into the tonsil to almost its full depth. In advance of the point there will be an area of coagulation, something about one-eighth of an inch beyond the point of the needle. It is important, as the author of the paper brought out, to have the inactive electrode fairly large and in good contact. In practice it works very nicely to have the patient hold the inactive electrode in his hands. We are always sure then of good contact. If the active electrode is a needle that is not inserted too deep and not kept in position too long, severe reaction will not take place. When it does take place, it simply means that coagulation was carried out deeper than was the intention of the operator, and hence the swelling of the pillars of the throat and so on.

One point the author did not bring out is this quite important one: the needle should be kept in motion while it is in contact with the tonsil, just a little backward and forward motion. I think that coagulation work is a very excellent procedure. One of the disadvantages of electro-coagulation is that the needle tends to stick, and if left still when withdrawn may pull out quite a little block of tissue. If you keep up a little motion, and if you give it a little revolution, it is well. If it were like the galvanic needle

attached to the negative pole, that would be fine, but the danger is that you pull out too much tissue in trying to withdraw the needle.

DR. WILLIAM KENNON, Nashville: Electro-coagulation may be the finest thing in the world, but I would like a little further illustration. I know lots of the men here have taken out tonsils, and you know the different types of tonsils. Some are round, some high up in the pharynx, some higher up into the soft palate. I really would like to know how deep you can stick that needle and how deep you shall stick it. If you stick your pharyngeal muscle, will it not do harm? I think it will. If you coagulate those muscles, they will slough out the same as the tonsils and you would have a distinct cicatricial contraction of the palate which would give a postoperative condition which would be disagreeable, to say the least.

DR. F. E. HASTY, Nashville: I should like to ask the essayist how long he has been practicing this procedure, how many patients he has cared for by this method, and what has been the results? I feel that it is very important that the session should have this information before allowing this article to be published.

DR. EARL GOYER, Jackson (closing the discussion): I certainly appreciate this discussion for the simple reason that I think I have accomplished just exactly what I hoped to accomplish by the paper. I have been working with this method for one year, and I am sorry that I cannot give just the number of cases treated. I have done it just merely to find out the advantages and disadvantages because I happen to have quite a number of friends who are using it and praise it

very highly. Personally I do not know of a more dangerous procedure in the world for the average man and one that is capable of causing more harm if it is improperly done, and if we do find a case occasionally that might be better coagulated than tonsillectomized they would be so few and so far between that the average man who is doing throat work alone would not be in position to handle the case.

I think one of the weakest points is that brought out by Dr. Kennon. The depth of the needle is the whole thing. You can destroy any tissue in the world if you continue the process. You not only destroy the tissue at the end of the needle, but your destruction goes deeper than that, and you may destroy any amount. That is the thing that I hoped to accomplish by this paper. Unless some of the other men are convinced more than I have been that coagulation is much better, they will not make use of it. I really think that the thing for us to do is to discourage coagulation of tonsils. I am convinced of that after what experience I have had with it in the past few years. I am convinced that it can be done, but in the average case there is no reason. I do not see that it offers us any advantage. I think Dr. Levy is inclined to be very nice about it in his discussion, but I really doubt if he will ever coagulate a tonsil. Dr. Lawrence has had more experience and can do it more thoroughly. I am convinced that tonsils can be coagulated. I presented this paper for the reason that I felt it would start a debate. I think we should discourage it for the average man. For a few men especially trained it might be a good procedure.

TWILIGHT SLEEP—REPORT OF 350 CASES*

SIDNEY MEEKER, M.D., Memphis

RELIEF of labor pain dates back to antiquity, when potions were given to women in labor. Even the god Apollo was said to have been born while his mother, Latona, was under hypnotic influence.

Sir James Y. Simpson, of Edinburgh, in 1847, in speaking in defense of painless labor said: "Pain in excess is destructive and even ultimately fatal, and the great pain accompanying parturition is no exception to this general pathological law. If this is true, and I believe it is, is it not demanded that we shall employ means at our command for the alleviation of pain incident to childbirth? There are still a few, maybe many, that believe that no relief should be given, but 'let nature take its course.'"

Simpson delivered the first woman under ether in January, 1847. In November, the same year, he first used chloroform in a delivery. In 1853 he delivered the Queen of England, using chloroform.

Morphine with scopolamine in obstetrics was first used in 1902, by Scheiderlein, and further developed in 1903, by Von Steinbuechel. Subsequently, it was used by Kronig, Pankow and Guass with varying success. Patapon and heroin has been tried in the place of morphine, but have no special advantages.

Dr. Karl Gauss, of Frieberg, Germany, was the first to use twilight sleep ("Dammerschlaf") to any extent. He first used .03 per cent solution of crystalline scopolamine hydrobromide and a one per cent solution of morphine; later he used one-half grain of narcopine in place of morphine. The first dose was 1.0 c.c. to 1.5 c.c. morphine solution plus one c.c. scopolamine solution given when pains were five or six minutes apart and lasting thirty seconds.

In a half hour the patient was shown a familiar object. In another half hour she was asked if she remembered it. If so, she was given 0.5 to 1.0 c.c. of scopolamine solution. The patient was kept in a darkened room and had her ears plugged with cotton. The memory test was relied on almost entirely as to how often to repeat the scopolamine. Usually four doses was all that was required. The general effect of scopolamine on the mother is flushed face, thirst due to arrest of salivary glands secretion, increased pulse rate, restlessness, sometimes true delirium, headache, nausea and vomiting. In one thousand (1,000) cases he reports seventy per cent perfect. Twenty to thirty per cent seemed to have inertia uteri with prolonged labor, calling for forceps; 13.7 per cent of the babies had oligopnoea or blue asphyxia. By oligopnoea he meant a condition in which the child after one or two inspirations or even a cry appeared to be in a state of profound sleep and forgot to breathe, the heart continuing to beat unaltered. They were easily revived by artificial methods. His death rate he gave as three per cent. Sometimes he said that it was difficult to separate the cause of oligopnoea due to morphine-scopolamine from that due to difficult labor. He considered his failure as due to (1) commencing too early, (2) too large a dose or repeated too often, (3) too short an interval before the birth of the baby.

Dr. G. W. Theobald, of the University of Leeds, Dublin, in 1925 used twilight in the Leeds Maternity Hospital on primara only. In his series of cases he reports an average of 10.7 hour as the length of labor under twilight where the average case without it was eighteen hours. The convalescence was nearly proportionately shortened. His dosage was morphine gr. one-fourth and scopolamine gr. 1/150 for the first dose.

*Read before the Tennessee State Medical Association, Memphis, May 11, 12, 13, 1926.

The second dose scopolamine gr. 1/225, the third and fourth doses scopolamine gr. 1/450. He said that in no case did the baby cause any anxiety, and the bogey of oligopnea was conspicuous by its absence. One can account for that by his small dosage.

My experience has been that twilight should not be started too soon, for often cases start out with severe pains and then for some cause or other they stop. In such cases twilight would only cause the pains to stop that much quicker. That has happened in four or five of my cases. I have had one case recently where labor had practically stopped, but on examination I found that the morphine-scopolamine had so thinned out the cervix that it was easily dilatable. I had an anesthetic given and did an easy version, thereby saving the mother many hours of prolonged labor.

When I first began giving twilight in 1914, I used the memory test to a certain extent. As I became more experienced I gradually discarded it and came to depend on the amount of dilation, the thinning of the cervix, and the descent of the head, to the proper dosage and the length of time between them. At first my dosage at times was too great, and I had a few cases of delirium. By delirium I mean cases that cannot be controlled except by the forcible aid of two or more assistants. I gradually decreased the scopolamine until I now give gr. 1/200 and even as little as gr. 1/400. I give H. M. C. No. 2, which contains morphine (gr. one-eighth) and hyoscine (gr. 1/200) as the first dose. I have never given over gr. one-eighth of morphine in any case, though I probably could have given more in a few cases to advantage. I very seldom have a "blue baby," and so far have not failed to revive them. Practically all "blue babies" that I have either have the cord around the neck or some other distosia to account for the condition. Where some cases have delirium to any extent I now give enough chloroform to thoroughly anesthetize them to "iron out" the perineum and partly dilate the cervix. Since August, 1924, as an addition to my usual twilight method, I have been using per rec-

tum the ether compound as devised by the Lying-in Hospital of New York City, which consists of the following formula: Quinine hydrobromate, gr. twenty; alcohol, gr. 180; ether, two and one-half ounces; olive oil, two ounces.

If the mother has previously taken ether with unpleasant effect, I do not use the ether compound, for she will bitterly complain even though thoroughly under the influence of the scopolamine. Between pains under twilight and especially with the addition of the ether compound per rectum, I can usually "iron out" the perineum as if I were going to do a version. Then if the cervix is well thinned, it can be fully dilated manually, thus doing in a few minutes what it may take several hours of pain to do. The head can then be gently pushed up and the fetus palpated as far as the scapula. If the cord is around the neck it can usually be unlooped and pushed back. At this time, if the position is good and no disproportion between fetus and pelvis, I usually give 0.5 c.c. of pituitrin and in ten to thirty minutes I expect the baby to be born. If the position is one of occiput posterior, which I find is quite often the case, or some other mal-position just as bad, I usually do a version under deep inhalation anesthesia. In three cases of multipara the abdomen was so thoroughly relaxed that I was tempted to do a version without an anesthetic, but for fear of too much contraction of the uterus at the wrong moment I had an anesthetic given. Occasionally with a large baby where the pituitrin will not do its work, I have to use low forceps. Being able to "iron out" the perineum thoroughly in most cases, I seldom have even second degree lacerations. If I think that I am going to have a bad laceration, I now do an episiotomy, which gives much better results than letting it tear.

I first began "ironing out" the perineum under twilight some four years ago, and found that I could do it almost as easily as I could when "ironing out" in doing a version under anesthesia. I have used the magnesium sulphate and ether compound method of the New York Lying-in Hospital in a few cases, but I consider the twilight

and ether compound method much the better. Under twilight, being able to "iron out" the perineum and dilate the cervix at an early stage of labor, mal-positions are discovered sooner and easier. I have found occiput posterior positions in twenty per cent of my last 100 cases. What percentage of these cases would have proven persistent occiput posterior I do not know, for I terminated them all by early version. It is certainly much easier and safer to do a version before they become persistent. Under prolonged labor many of these cases of occiput posterior revolve into an anterior position, but it will take hours of pain to do so. Here twilight and elective version will shorten labor many hours.

Under twilight I do not let my patients pull on straps or their friends. I instruct them to take a deep breath when a pain is on and hold it as long as possible. Then take another deep breath and hold until the pain is gone. Taking a deep breath fixes the abdominal muscles and gives a brace for the uterus. Between pains I encourage them to sleep. After labor has ended they sleep soundly for from one to hour hours and awake feeling fine. This is very different from the exhaustion following the usual pulling and straining kind of labor.

The late Dr. Petty was partially responsible for my work with twilight. I had had several cases of morphine habit to treat some years ago and followed his method of using hyosine in the treatment. I had been using H. M. X. No. 2 for several years in my maternity cases with good results, and when twilight was being tried out I decided to use it. I consulted with Dr. Petty and he said that he could see no danger in using scopolamine. He said that in an occasional case I would probably have considerable delirium, but that the drug would do no real harm. I followed his advice as to dosage and have had only a few cases that were hard to control. I have not lost a mother in these 350 cases, and have had only three still-born babies. I do not believe that scopolamine or twilight was in any way responsible for their deaths. I have had five premature babies die within the first twenty-four hours, but

they did not have any symptoms that could have been attributed to twilight. On January 1, 1926, I delivered premature twin boys. The larger and apparently stronger one died at the end of twenty hours. That was fairly good proof that twilight was not the cause of the death, as the weakly one survived and is strong and healthy now.

Under twilight the pains are apparently not as strong as are the cases without it. But if you happen to have your hand within the uterus at the height of a contraction, the pain is much stronger than it seems, to judge by the actions of the mother. The relaxing effect of the morphine-scopolamine on the muscles that keep the uterus closed and prevents descent of the fetus is certainly one of the best features of twilight. It more than counterbalances the slight inhibitory effect the drugs may have on the expelling forces. That being true, I find that my cases seldom go over four hours after I begin twilight. If they do go over four hours it is nearly always due to some distosia which calls for the use of low forceps or a version. My first first case was such a one in November, 1914.

Mrs. R., age 37, para iii., had been under twilight four hours. The cervix was open but head not descending as fast as I thought it should. I gave 0.5 c.c. pituitrin and repeated in a half hour. My notes on the case read thus: "Applied low forceps and delivered the head without lacerations, but had a hard time delivering the shoulders, which were unusually large. The cord was about the neck and the baby weighed ten pounds." I delivered her again in 1922 in three hours and ten minutes, but that baby weighed eight pounds instead of ten, as before.

My second case was April, 1915, and was one where I started twilight too soon, as the pains practically stopped for five hours. When they did start again the cervix dilated within two hours and the baby (weighing only five pounds) was delivered in another hour and a half. I delivered her second baby in 1922. It was an eight-months baby weighing only four and one-half pounds. Time of twilight, two hours. In 1916 five others let me use twilight on them. The

number has gradually increased until the past year I have delivered 110 under twilight.

In going over my records up to 1923 I find that my dosage of scopolamine was seldom less than gr. 1/150 and some as much as gr. 1/100. Since 1923 I have been using gr. 1/200, and occasionally as small as gr. 1/400 with just as good results as far as their memory of labor was concerned.

My last two cases were as follows: Mrs. J. C. H., aged 34, para ii., irregular pains for a week and about two weeks overdue. Head engaged, cervix way posterior and thin but no dilation. No heart sounds heard. Such condition usually turn out to be occiput posterior positions. On account of being worn out from the false pains I decided to take her to the hospital and induce labor with a "bag." After "ironing out" the perineum under gas anesthesia, I dilated the cervix to about three fingers and inserted a "bag." The position was L. O. P. H. M. C. No. 2 was given at 9:30 p.m., just after the insertion of the bag. At 10:30 p.m. scopolamine gr. 1/200 was given; at 11:30 p.m. ether compound oz. four was given per rectum; at 12:15 a.m. scopolamine 1/200. The bag was expelled at 1:30 a.m. At 1:55 a.m. ether anesthetic was started and a nine-pound baby was delivered by version at 2:17 a.m. There was only a slight mucous tear of the fouchette. I delivered her first baby by version in 1922 after she had been under twilight nine hours. The dilation was about three-fourths but the head would not descend. The anesthetic and version took thirty minutes. There was a second degree laceration which was repaired.

Mrs. E. H., age 20, para i. Pains began at 9 p.m., but were weak. Membranes ruptured at 1 a.m. I first saw her at 2:30 a.m. There was dilation of two fingers, cervix not thin. At 4 a.m. there was a dilation lemon size, cervix thinning. H. M. C. No. 2 was then given; at 5 p.m. scopolamine gr. 1/200 was given and repeated at 6 a.m. At 7 a.m. I "ironed out" the perineum and dilated the cervix. At 7:15 I gave 0.5 c.c. of pituitrin and a seven-

pound boy was born at 7:25. No lacerations.

These few cases give an idea of how twilight acts under various conditions. I believe that the mother is left in a very much better condition following delivery under twilight. In the majority of cases they say, "I feel so good. When can I get up?" I do not do as Dr. Gauss advised, to let them get up on the third or fourth day, but insist on their remaining in bed nine days. The mother is usually over the effects of the drugs in three or four hours, and there is no bad effect on either the mother or the child.

In doing versions I am following the technique of Dr. Potter as closely as I am able. Since hearing his paper at the last Tri-State meeting I am doing more versions than ever. He gave several new points which make the version much easier. Loosening the membranes from the wall of the uterus before rupturing them. Seeing that the arms are properly folded and the correct placing of the head in the upper strait by manipulation through the abdominal wall.

At first many of my patients were almost afraid to take twilight, for so many of their friends would tell them that it was so dangerous, and that the mother was liable to die and the child might be an idiot from the use of the drugs. These friends said they knew it was true for their doctors had told them so. The past year or so such advice does not worry me, because I have delivered enough cases under twilight to know that there is no truth in it, if proper dosage is given. I believe that my death rate is as low, if not lower, than the general run of maternity cases and there is absolutely no permanent effect either on mother or child. While my number of cases to date is not large, the results on the whole have been so satisfactory that I expect to use it more and more. My belief is that twilight sleep or some modification under another name will be used more and more because the prospective mothers are getting wise. They are finding out that their friends are getting relief and they will demand it also.

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J. F. GALLAGHER, M.D. -----Editor

DECEMBER, 1926

EDITORIAL**THE COMING CHATTANOOGA MEETING**

Unless all signs fail the ninety-fourth annual meeting of the Tennessee State Medical Association, which meets in Chattanooga in April, will be one of the best meetings the Association has ever experienced. The Eye, Ear, Nose and Throat Section and the Association of Railway Surgeons are preparing attractive programs for the first day, Monday, April 11th. While these sections have sufficient number of scientific papers to interest their respective members, they also provide recreation features so that their membership will not be fed up on purely scientific work.

The general session will open at 9:00 a.m. on the morning of Tuesday, April 12th. These sessions will be held each morning and afternoon until Thursday noon. In addition to these one session will be held on Tuesday night when the presidential and another special address will be given.

Wednesday morning will be devoted to a series of diagnostic clinics covering various branches of medicine and surgery, including the specialties. These clinics will be conducted by the members of the Chattanooga and Hamilton County Medical Society.

Wednesday evening the Society will be the guest of the Chattanooga and Hamilton County Medical Society at the new Reed House. The headquarters and meeting places of the general session, the two sections, registration and scientific and commercial exhibits will be held at the Hotel Patten.

Chattanooga is perhaps the best conven-

tion city of the South and this, coupled with the many scenic and historical places of interest, together with the noted hospitality of the Chattanooga and Hamilton County Medical Society should make it quite evident that this will be a banner meeting. Another feature which should make Chattanooga attractive is that all of the highways leading into Chattanooga are excellent and those who desire to travel by automobile can do so with perfect comfort.

DEATHS

Dr. James Hugh Lackey, of Ripley, aged 57, died November 16 of pneumonia. Dr. Lackey was a graduate of Vanderbilt University School of Medicine in the class of 1894, and was a member of the Lauderdale County Medical Society at the time of his death.

Dr. Harrington Marr, of Nashville, aged 52, died December 14 of heart disease. Dr. Marr was a graduate of Vanderbilt University School of Medicine in the class of 1896 and a member of the Davidson County Medical Society.

Dr. Clarence H. Davis, aged 40, of Lancaster, died December 16. Dr. Davis was a graduate of the University of Tennessee College of Medicine, Memphis, in the class of 1912.

Dr. William T. Allen, of Gallatin, aged 74, died December 29. Dr. Allen was a graduate of the University of Nashville Medical Department of the class of 1874 and was a member of the Sumner County Medical Society when he died.

Dr. John T. Altman, of Nashville, aged 61, died December 30. Dr. Altman had been a medical practitioner in Nashville for forty years and was a member of the faculty of the Vanderbilt School of Medicine. Dr. Altman graduated from Vanderbilt University School of Medicine in 1886 and was a member of the Davidson County Medical Society at the time of his death.

MEDICAL SOCIETIES

The Wilson County Medical Society held their regular meeting December 1 and elected the following officers for the new year: Dr. R. B. Gaston, Lebanon, president; Dr. J. L. Davis, Watertown, vice-president, and Dr. J. R. Bone, Lebanon, secretary.

The Hardeman County Medical Society held their last meeting for the year at Bolivar, on November 2, and set a fixed date for their meetings for the coming year, the first of which will be held the first Tuesday in January, and thereafter the first Tuesday in April, July and October, at Bolivar.

At the meeting of the Polk County Medical Society, December 6, the following officers were elected for the coming year: Dr. W. Y. Gilliam, Copperhill, president; Dr. A. J. Guinn, Ducktowns, vice-president; Dr. F. O. Geisler, Isabella, secretary-treasurer; Drs. T. J. Hicks, H. P. Hyde and F. M. Kinsey, sensors; Dr. T. J. Hicks, delegate, and Dr. C. W. Strauss, alternate.

The Jefferson County Medical Society met on November 7 and elected the following officers for the coming year: Dr. Ben E. Cline, Strawberry Plains, president; Dr. H. L. Tarr, Jefferson City, vice-president; Dr. B. M. Tittsworth, Jefferson City, secretary-treasurer, and Dr. T. R. French, Dandridge, censor.

At a recent meeting of the White County Medical Society officers were elected as follows: Dr. W. M. Johnson, Sparta, president, and Dr. S. E. Gaines, Sparta, secretary.

The Anderson County Medical Society elected the following officers to their society for the new year: Dr. F. B. Robinson, Briceville, president; Dr. H. D. Hicks, Clinton, vice-president, and Dr. J. S. Hall, Clinton, re-elected secretary.

At the December meeting of the Johnson City and Washington County Medical Society the following officers were elected for the new year: Dr. W. J. Matthews, Johnson City, president; Dr. C. H. Kyker, Johnson City, vice-president; Dr. C. W. Friberg, Johnson City, secretary-treasurer.

The Roane County Medical Society held their annual meeting December 21 and elected Dr. J. B. Cross, Harriman, president of the society; Dr. W. W. Hill, Harriman, vice-president; Dr. J. C. Fly, Kingston, secretary-treasurer, and Dr. F. A. Neergaard, Harriman, censor.

At the regular session of the Weakley County Medical Society, December 15, Dr. T. B. Wingo, of Martin, was elected president for the new year; Dr. H. G. Edmondson, Martin, vice-president, and Dr. J. E. Taylor, Martin, secretary-treasurer.

The regular monthly meeting of the Maury County Medical Society was held in the Elks' lodge room at Columbia on December 13 and officers for the new year were elected as follows: Dr. J. H. Jones, Mt. Pleasant, president; Dr. R. S. Perry, Columbia, first vice-president; Dr. W. R. Webb, Hampshire, second vice-president; Dr. W. K. Sheddan, Columbia, re-elected secretary, and Dr. R. S. Perry, G. C. Williamson and J. W. Wilkes, censors. The society has had a very successful year, having held monthly meetings which were well attended. Hopes were expressed that next year will be the best in the history of the society.

The following officers were elected by the Knox County Medical Society for the year 1927: Dr. Kyle C. Copenhagen, president; Dr. Eugene Abercrombie, vice-president; Dr. Jesse C. Hill, secretary-treasurer (re-elected); Dr. M. H. Lee, judicial councilor.

Officers elected to the Shelby County Medical Society for the coming year are: Dr. George R. Livermore, president; Dr. A. G. Jacobs, vice-president; Dr. A. F.

Cooper, re-elected secretary; Dr. T. N. Copledge, re-elected treasurer; Dr. E. C. Ellett, trustee of the Memphis Medical Journal; Dr. J. A. Crisler, censor.

NEWS NOTES AND COMMENT

Dr. Lucius Burch was elected second vice-president of the Southern Surgical Association at a recent meeting held in Biloxi, Mississippi. Dr. Burch graduated from Vanderbilt in 1896 and is on the staff of the Vanderbilt Hospital, being gynecologist of that institution.

Dr. Herbert Acuff, of Knoxville, for the fourth successive year was elected president of the State Tuberculosis Association at the annual convention which was held in Knoxville, November 30. Dr. James A. Price, of Memphis, was elected vice-president of the association.

An additional \$10,000 has been given

by Samuel H. Hodge, Chicago, capitalist, to the erection of a nurses' home for the new hospital being erected in Murfreesboro. The hospital is being built through the munificence of the commonwealth fund of New York. It will be completed in about two months at an expenditure of \$100,000.

Dr. J. W. L. Cooper, of LaFollette, has established an office in Athens and will reside there.

Dr. Edward T. Newell, of Chattanooga, was elected president of the Chattanooga and Hamilton County Medical Society at a meeting of the society December 2. Other officers elected for the coming year were Dr. E. White Patton, vice-president; Dr. S. F. McIntosh, secretary; Dr. B. S. Wert and Dr. J. B. Steele, members of the board of censors; Dr. H. L. Fancher, member of the board of governors; Dr. S. H. Long and Dr. G. Victor Williams, members of the house of delegates.

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TREATMENT OF CORNEAL ULCERS*

LEWIS M. SCOTT, M.D., Jellico, Tenn.

AFTER attempting the preparation of this paper, I realized that I should have added causes to the title I have selected, since it is difficult to discuss the treatment of ulcers of the cornea without, to some extent, mentioning certain phases of the aetiology. I trust, therefore, that you will pardon whatever digression I may make along this line.

What I shall have to say at this time, upon the subject of corneal ulcers, will be largely from my own experience in treating such affections during a period of years. Since I have nothing new to add, save perhaps a suggestion as to some of the predisposing causes, my purpose will be to emphasize the importance of attention to detail and method of applying treatment.

I am lead to believe, in comparing my experience with that of men doing eye work in other localities, that climate, environment and habits play an important part in the frequency as well as the progress of certain types of eye infections such as occur in my own section. The climate in this mountainous section of north eastern Tennessee and south eastern Kentucky is very damp, and sudden weather changes prevail,

especially in winter and early spring. In the low lands, where the majority of the people live, the altitude is very low. As a result of these climatic conditions catarrhal affections of the nose and throat is very prevalent, thus producing a favorable condition for the development of certain types of corneal ulcers, the specific germ gaining entrance to the eye by way of the lachrimonasal duct. In a paper read before this Section at one of its earlier meetings, I called attention to the frequency of dacryocystitis as a predisposing cause of serpiginous or pneumococcus ulcers. If this be true it would lead us to believe that the pneumococcus is the specific micro-organism in most of the cases of infected tear sacs. We need only to call to mind the prenicious and migratory nature of this peculiar type of bacteria when it invades the lung and pleura, and its fatality to human life, to appreciate the danger to the sight when once it gains entrance through a wound in the cornea.

My experience is that coal miners are more liable to ulcers of the cornea than any other class of people, partly due to the fact, of course, that they are more susceptible to eye injuries. Very few miners, if any, wear protecting lenses while working inside the mine. And like all other unskilled

*Read before the Ear, Eye, Nose and Throat Section, Tennessee State Medical Association, Memphis, May 11, 12, 13, 1926.

workmen, they have very little knowledge as to the danger of infection following injuries to the eye.

Before taking up the matter of local treatment, I desire also to express my views with regard to the influence that diet and intestinal toxemia have upon the progress of these conditions. Miners as a rule are heavy eaters, especially of meats and saccharine foods. My observation is that cases progress more favorably where the diet is restricted largely to one of whole milk, cooked fruits and leafy foods, and the intestinal tract is freed from toxic material by the aid of a dose of magnesium sulphate in a glass of water before breakfast each morning.

We all know the importance of being able to see these cases early, and before the infection has become deep seated. It being a much easier matter to cure a corneal ulcer when it is of a superficial nature only.

Usually when first seen the eye is extremely sensitive, and before making an examination or attempting to treat the ulcer, it is well to quiet the eye by instilling a few drops of a two per cent solution of butyn. This serves also to render the surface insensible to pain from the treatment that is to follow. I never use cocain as a local anesthetic in the eye any more, but prefer to use butyn instead, as it does not impair the epithelium in any way. It is hardly necessary to mention as the next step the free irrigation with a warm boracic acid solution to wash away any infectious material, since no doubt we all resort to this more or less as a matter of routine.

In cases of simple ulcer we usually cauterize the surface with pure phenol, after the ulcer is first cleared out by use of curett or other method. The phenol is applied with a small piece of absorbent cotton wrapped tightly upon an applicator, and followed immediately with a drop or two of alcohol to neutralize and prevent undue action from the acid. It is best in most cases, after the cauterization, to place the eye at rest with atropin. Usually in this type of ulcer it only be necessary to keep the eye protected with a bandage and follow with irrigation

and the use of mercurochrome two or three times a day.

A large per cent of the cases of corneal ulcers that I am called upon to treat are the serpiginous or pneumococcus type, which demand a much different and a more painstaking method of treatment. If we have such a thing as a specific in the treatment of eye diseases, I think that it is optochin in the treatment of pneumococcal ulcers of the cornea. This is a quinine derivative, and is chemically known as ethyl hydrocuprein. My attention was first called to this drug as a treatment of serpiginous ulcers from an article by Dr. Ramsay of Glasgow, Scotland, which was published in the *Ophthalmic Record* over ten years ago. Since that time I have been using optochin as a remedy in these conditions with uniform good success. After the use of the butyn solution as an anesthetic, and the eye is freely irrigated with the boracic acid solution, we then with a small spear pointed instrument, curett away the infiltrated and necrotic tissue; in other words, we clean out the ulcer like we would in any other part of the body, but of course in a much more delicate manner. If there is overhanging edges of the epithelial layer this should be trimmed away with a pair of delicate pointed scissors, as this enable us to reach the infecting organism and to prevent further burrowing beneath the epithelium. A two per cent solution of optochin is now applied to the surface of the ulcer and the applicator kept in position for several seconds. This should be repeated once daily, and a one per cent solution of the optochin instilled in the eye every two to three hours during the active stage of the ulcer. We all recognize the value of atropin in most cases of corneal affections, and especially do we find it a valuable aid in the treatment of ulcers. It serves as a splint to the inflamed eye and tends to forestall iris complications. No less than a one per cent solution should be used, and this to be continued, as indicated, during the inflammatory stage of the disease. Some times in delayed cases, where synechiae and other complications exist, it will be neces-

sary to apply the atropin in the form of an ointment to prevent it from being washed away by the excessive flow of tears before absorption can take place. I have frequently seen such conditions as hypopyon, adhesions of the iris, and deep corneal infiltrations clear up almost like magic under the combined use of optochin and atropin ointment. I now use atropin for its full effect in these grave conditions, and in cases where the patient is over forty-five years of age, where formerly I had a hesitancy in doing so for fear of producing blindness from sudden increased intraocular tension. I think the good we do, by using atropin under such conditions as has just been mentioned, outweighs the danger of any such probability.

Dionin is one of the few modern drugs which has stood the test of time, and its action is almost certain. Primarily I regard the action of dionin as lymphagouge, evidenced by the chemosis produced by the instillation of a five per cent solution. Darier, its most ardent advocate, and who by the way, accidentally discovered its action, claims that the dilatation of the lymphatics or blood vessels causes the natural protective substances of the blood to pass into the tissues of the conjunctiva and cornea, and even introocularly. Its anelgesic effect is well known, and the relief of pain in most corneal affections is prompt and complete (Calhoun). My views with regard to the action of dionin, after having used it regularly for a number of years, is no less sanguine. Its best effect, however, as a remedy in ulcers of the cornea is after the more active stage has subsided. By its action upon the lymphatics and blood vessels it tends to promote absorption of the corneal infiltrates, thereby preventing opacities. It is used with good effects even in the earlier stage of the ulcer, where it does not increase too much the hyperemia already present. From its peculiar action I find that it enhances the effect of atropin when used at the same time. When dionin fails to produce any reaction, which is usually the case in from seven to ten days, it should be discontinued for a few days, after which it is continued as before. It

is my custom to use the five per cent solution of dionin in most cases of corneal ulcers, and especially where there is danger of scarring effects or opacities being left, and continuing to use it once or twice daily as long as any results can be procured.

With regard to milk injections in these affections, must admit that the treatment has not proven of very decided benefit in my hands. Perhaps mine were cases in which milk by this method was not indicated. To my mind it is largely a matter of speculation as to just when such treatment is indicated or will be of benefit when administered.

Subconjunctival injections of cyanide of mercury in the complicated cases of corneal ulcer has given exceptionally good results in the experience of some oculists. Dr. Emmett L. Jones, of Cumberland, Maryland, perhaps is the most enthusiastic advocate of this method of treatment, claiming to be able to save the vision even in cases of panophthalmitis. Some how I have never gotten sufficient courage to use the injection. In two or three instances, perhaps, I might have done so, had the patients not have refused to submit to it, after I had first advised them of the pain and swelling of the conjunctiva and eye lids that would follow the injection. Then besides, knowing the type of individuals with whom I was dealing, the probabilities were, that if the vision was not saved by the injection, they would believe that the loss of sight was the result of it.

Quite a number of eye men claim to obtain good results from thermocautery, some using it to the exclusion of all other remedies. I have always considered the treatment too radical; fearing the danger of scarring as a result of over action of the cautery upon the tissues of the cornea.

DISCUSSION

DR. HARRY GRADLE, Chicago: This very practical paper of Dr. Scott's opens up several thoughts of a purely practical nature without going into the etiologic factor, which Dr. Scott has avoided. It might be well to add some of our own personal experiences. I agree with the doctor in not liking to cauterize a serpiginous ulcer of the cornea because of the likelihood of a result-

ing scar. If the ulcer can be controlled in forty-eight hours by purely medicinal means we have a better cornea resulting than if we resorted to chemical or thermal treatment. One thing I have found of service is to apply a paste of mercurochrome to the eye. I apply this paste with a spatula directly to the ulcer and allow it to remain there two or three minutes and the penetration of the mercurochrome into the corneal tissue can be seen very clearly. If in the early stages of a corneal ulcer we wish to obtain pupillary dilatation and the spastic contraction cannot be overcome by atropin, we have secured good results by injecting adrenalin. Not long ago a very practical paper appeared by a California man in which he advocated injections of adrenalin and atropin. I do not believe atropin is necessary because it has been shown that there is no greater absorptive effect of atropin when injected subconjunctivally than when injected into the cornea. In case adhesions are present the effect will be enhanced by adding cocain and injecting three to five minims at the point of adhesion fairly near the limbus. We all know that after these serpiginous ulcers have been gotten under control by mercurochrome or whatever drug you wish to use, we arrive at a certain stage where the ulcer becomes indolent and where the repair of the corneal tissues is extremely slow. In these cases I fall back on iodoform, one per cent ointment of iodoform and atropin instilled once or twice a day. This is apt to produce a more rapid regeneration of corneal tissue than almost any stimulant we may use on the cornea. I believe in that stage iodoform is more effective than dionin.

DR. E. C. ELLETT, Memphis: In the indolent stage of corneal ulcers a simple remedy is to dust sulphate of quinine on the everted lid or into the eye. I got that suggestion from Dr. Searcy, of Tuscaloosa, Alabama, and I believe it is somewhat analogous to the reaction we get from dionin.

I would like to ask Dr. Scott if he has used Shanahan's thermophore. That instrument is very popular in St. Louis. They regard it as practically a specific for pneumococcus ulcer.

I would like to take issue with Dr. Gradle as to the value of the subconjunctival injection of atropin. Dr. Post has referred to it in reporting some experiments and said that the subconjunctival injection seems to put the atropin more quickly and in greater quantity in the aqueous humor than if it is instilled into the conjunctival sac. I have seen cases of synechia where one or two drops under the conjunctiva opposite the synechium would often break it away when it could not be broken with drops instilled into the eye. In operative preparation if you inject cocaine under the conjunctiva you will get a dilatation opposite where you inject it, whereas the rest of the pupil may be unaffected.

J. D. CARLTON, Union City: I would like to

say a word about serpinitis. I found that better in corneal ulcer than any other remedy.

DR. A. B. DANCY, Jackson: Having many ulcers resulting from traumatic injuries of the cornea, as I do a large industrial practice, I have been using the Shanahan thermophore in all my early cases, as I hope to find something that will be satisfactory in the treatment of these ulcer cases. I will say that in using it thus far, as described by Dr. Shanahan, I am very much pleased with it. I find that instead of using the many remedies suggested by the ophthalmologists and the text books on the subject, it is proving a satisfactory agent.

In the use of a great many of our remedies we have a great destruction of tissue and resulting in a greater amount of scar tissue. In the use of thermophore I think I have something that in the end results will be more satisfactory to the patient. In industrial injuries we pay for the end results.

DR. C. S. SAVAGE, Nashville: It takes a long time for some good thing to soak in. I have several times, in the past thirty years, mentioned what I believe to be the very best local application for corneal ulcers. It destroys the germs without destroying the cells of the cornea. It stimulates healing and is not painful but rather anesthetic after it has been applied for a little bit. It pains a little when first used. I wonder if any one of you can guess what it is. It is acetic acid. Of all the remedies I have used, acetic acid surpasses them. I had used everything that any one else has ever used until I found out that acetic acid will do the work. I have had some investigations made about the destruction of germ life with even weak acetic acid solution. It destroys the germs in a little while. Of course I have not had sections made as to the effect of acetic acid on the normal cells of the cornea after the germs have been destroyed, but I can watch with my own eyes and see good results. There should be a cleansing, antiseptic and anodyne wash used pretty constantly through the day with a view of keeping the eye clean; but one single application, in twenty-four hours, or a six per cent solution of acetic acid, by means of cotton on a toothpick, touching the cornea ulcer, will give excellent results. It will whiten the corneal cells; but the patient will become more comfortable and the ulcer will go on to healing quicker than with the ordinary remedies. I would not hesitate if the six per cent solution did not accomplish the work to use a stronger solution. I would use the U. S. P. strength and I would not hesitate to use it every day until I destroyed all the germs in that ulcer. I usually do not have to use the thirty-six per cent strength, which is the U. S. P. solution, more than once and then go on and bring about a healing of the ulcer by means of six per cent. They get well with much less scar, less opacity, than any other remedy in my judgment, and my judg-

ment has some little basis on which to stand, for I have been practicing its use these many years.

DR. HERSCHEL EZELL, Nashville: I would like to bring to your attention the importance of removing so simple a thing as wild hairs in the treatment of corneal ulcer. It, of course, is a simple matter, but these small lashes are liable to be overlooked. They are a source of irritation which delay the healing of a corneal ulcer. These eyelashes are not always easy to detect. Some of them are quite invisible. There is another class of eyelashes that will mislead you and those are the ones that when you look at them they seem to be in place and yet the patient will go home and for some reason they become wild. I have a patient right now whom I have been treating for corneal ulcer for three or four weeks. I could not determine why this ulcer would not heal. I treated it according to Dr. Scott's method mainly but could not get it to heal until I removed nearly all the lashes of the upper lid. Now it is healing and practically well.

DR. A. C. LEWIS, Memphis: For a number of years the actual cautery has been a sheet anchor with me in treating these serpiginous ulcers, because I have never failed to control them with it. I have failed with everything else. I feel that I do not get more scar formation from this method than if I did not control them primarily. I have not tried Dr. Gradle's mercurochrome remedy. I will certainly try it the first chance I get.

I agree with everything that Dr. Scott said about dionin. For almost twenty years I have used it continuously and it is very efficacious.

Dr. Ellett mentioned the use of sulphate of quinine locally. I have not used it this way, but in these indolent ulcers I have been using quinine internally. Whether we have any malaria history or not, or find any malaria germs. For some reason they heal when the patient gets saturated with quinine. I have made it a rule to use quinine in these indolent ulcers when we cannot find any special cause for them and have certainly been very much pleased with the results.

Not much was said about fecal infection in these cases, but I am reminded of one case that I could not get to heal. It was an indolent ulcer of very superficial nature. The man had bad tonsils and teeth. He had his teeth attended to but would not have his tonsils out. Finally when the ulcer would not heal he consented to have his tonsils removed, and the ulcer healed immediately.

DR. STEWART LAWWILL, Chattanooga: In these industrial cases workers in wood shops are more prone to have ulcer than are workers in steel. It may be because workers in wood shops are more apt to get dust or wood into the eye which is not sterile. It may be some little tiny miniature piece of wood splinter which sticks in the cornea or a bit of sawdust that prevents the cornea from healing. Steel usually flies into the

eye hot and is sterile. I had one case of a wood-worker in which I felt sure there was a very tiny piece of splinter left in; this resulted in ulcer of the cornea. Since then I stain them with fluorescein after scraping the cornea thoroughly. This will often reveal any foreign particle that may be left. Fluorescein may have some anesthetic value. I have not had a corneal ulcer following one of these since I have been using this treatment.

DR. L. M. SCOTT (closing the discussion: I wish to thank the gentlemen for their liberal discussion. Two things I desire to call attention to especially were the probable effect, as a predisposing cause, that certain climatic conditions played in the cases of pneumococcus ulcer, and the specific action of optochin in the treatment of this type of ulcer. Neither of these, however, were touched upon in the discussion.

With reference to Dr. Savage's treatment with acetic acid, may say that he can get the whitening effect on the corneal cells, that he speaks of, with a two per cent solution of optochin, and with no danger of any bad after effects. The continued use in a one per cent solution acts also as a sedative to the eye in addition to its other effects.

Dr. Gradle mentioned the use of mercurochrome in the form of a paste. While I have never used it in this way, I am impressed with the idea. As to the use of iodoform, to which he also refers, wish to say that the only experience I have had with this drug as a treatment of corneal ulcers is in the preparation known as iodocyl two per cent, an ointment put up by Nelson, Baker & Co., of Detroit.

Dr. Ellett referred to the treatment known as "Pasteurization," a method originated by Prince.

While preparing my paper my attention was called to an article by Dr. Otto Reiche, which was published in a subsequent issue of the Pennsylvania Medical Journal, in which he states that his experience with this method has been satisfactory and that the results has far exceeded his expectations. Says that he is keeping his irons in the fire and lying in wait for corneal ulcers. This method appeals to me, since the heated end of the metal is not allowed to come in contact with the surface of the cornea. I am favorably impressed with this form of treatment. It is a very practical method of using heat and without the danger of destructive effect of the severer forms of cautery applications.

The effect that focal infection has upon the progress of ulcers of the cornea is a very important point which Dr. Lewis brought out in his discussion. In delayed cases one should be on the lookout for foci of infection outside the orbit. I have sometimes observed that an abscess at the root of a tooth would retard the cure of a corneal ulcer case. The foci may be, of course, in the tonsils or sinuses.

CYCLOPEGIC'S COMPLICATIONS*

E. C. ELLETT, M.D., Memphis

IN 1910, when Gifford reported a case of glaucoma brought on by the use of homatropine, only two other cases had been reported, and in 1916 when he presented the subject to the Section on Ophthalmology of the A. M. A. he was able to collect only eight more cases from the literature, including four more of his own reported in that paper. But nearly every one who spoke in the discussion was able to add one or more cases, and it is probable that many more cases occur than those reported.

Case 1. Mrs. H. M., aged 31, was seen in September, 1906, complaining of headache and blurring of the vision on use. She was wearing glasses, $+1.00 +.50$ ax 180 in each eye. The only significant thing in her history was that her father was blind as the result of glaucoma. A cycloplegic was not employed, but her manifest hyperopia of $+1.75$ was corrected and she was relieved of her symptoms. The pupils, eye grounds, etc., were all normal. In November, 1906, she was treated for conjunctivitis and soon recovered. In 1910 there was a return of the headache, and in my absence my assistant refracted her under homatropine. The error was $+2.25 +.50$ ax 90 in each eye. A change was made in the glasses and she was soon relieved. There were no unfavorable results from the use of the cycloplegic. In November, 1916, being then 41 years of age, she was again troubled with her eyes, and in my absence from the city she again consulted the same physician whom she had seen in my office, who was now practicing independently. He again used homatropine, presumably in the same strength (gr. twelve to the oz.) and in the same manner (six drops at ten-minute intervals) as before. The pupils remained dilated beyond the usual time, and three days after the drops were used the right eye became red and painful. Eserine was used, eight grains to the ounce, and depressed her so much that her physician was called to see her. Five days after the homatropine was used, that is, November 5, 1916, I saw her and found the following: O. D. ball red, pupil five mm. in diameter and a little irregular. Vn. 20/100, $+2.50$ equals 20/20. Fundus normal. T. (McLean) 35. O. S. Ball white, pupil 1.5 mm., Vn. 20/60, $+2.50$ equals 20/20 m. T. (McLean) 50. Fundus normal.

She was treated with myotics and dionin, which were interrupted about two weeks later on account of the appearance of signs of iritis in the right eye. The vision remained normal with

glasses, the pupil of the right eye remained larger than the left, usually about five mm., and the iris atrophied in its upper part, the tension seemed normal to the fingers, and varied from 20 to 35 with the McLean tonometer. The fields, vision and eye grounds were normal. The patient was not regular in her visits, and myotics were used irregularly. I saw her last, or rather she saw me last, on September 22, 1917, when the only thing abnormal was the slightly dilated right pupil. A year later she reported at my office while I was in the army. The right eye showed all the signs of acute glaucoma, but the tension was not taken except with the fingers, and no record was made of the vision, nor any note of the condition of the left eye. Under the usual medical treatment she improved and was told that unless the improvement was prompt and permanent an operation would be necessary. She left the city soon after this and went to Cleveland, Ohio, where she consulted an oculist who advised an operation. This she declined and I saw her again in June, 1919. The right eye could see light. T. 60 (McLean) pupil dilated and vertically oval, due to the iris being atrophied above, media clear, disk deeply cupped. The left eye was blind and showed coarse injection, a widely dilated pupil and opaque lens. A La Grange operation on the right eye was without result, and she now has added to the loss of her sight the tormenting symptoms which accompany the epithelial dystrophy so common in such eyes.

Case 2. Mrs. F. C., aged 28, was seen in March, 1921, with the history that at the age of fourteen she had sore eyes, with poor vision and photophobia, first in O. D. and later in O. S. She recovered, but had a similar trouble at eighteen, and the vision of the right eye had never been so good since then. Vision was O. D. 20/40. O. S. 20/30 p. There was a slight uveal ectropion at the margin of the pupil and both corneae showed fine deep vessels. At a later date with the slit lamp these were seen to be carrying blood. The former trouble was evidently an interstitial keratitis. The Wassermann was negative. Under homatropine the correction of a low compound M. As. gave 20/20 $+ 20/20$ p. The homatropine solution contained twelve grains to the ounce and was dropped in the eye every ten minutes for an hour. Nine days later word was received from her home in a nearby town that the left eye was red, blurred and painful, and that the trouble began with a pain in the eye three days after the drops were used. Letters and telephone messages secured her attendance at the office on April 9, nearly a month after the other test. The right eye was normal, vision 20/25 with glasses. The left eye saw 20/70 with glasses. Pupils five and six mm. Left not active to light. The eye grounds were normal. Tension was O. D. 48, O. S. 100 (McLean tonometer). Under eserine the tension fell and vision rose in O. S. to 20/20. In ten days the tension was McLean R. 28, L. 24, Gradle R. 24, L. 11. Pupils two and six mm. Between this date and July 18 the tension varied in the left eye from 42 to 90 McLean, and from 42 to 52 Gradle, the pupils about 4 mm. and inactive.

*Read before the Eye, Ear, Nose and Throat Section, Tennessee State Medical Association, Memphis, May 11, 12, 13, 1926.

The fields showed O. D. slight contraction. O. S. slight contraction and a variable relative scotoma in the lower temporal quadrant. This sometimes involved the blind spot, but neither on the ordinary perimeter or Peter's campimeter of the tangent screen could I ever demonstrate any enlargement of the blind spot. Dr. W. H. Wilmer, who saw her in November, 1921, though her blind spot was almost double its normal size in each eye, but I could never make it so. Dr. Wilmer advised operation if the symptoms persisted. On July 18, 1922, an iridotaxis was done on O. S., and on the 28th the tension was 35 McLean. September 13, T. McLean 60, Gradle 52. The edge of the pupil was visible, but the pupil was displaced up and out. The pupil reacted to light and to eserine. March, 1922, T. Hg. 24, McLean 40. Eserine was used in the left eye from the time of the operation until January, 1924, when it was stopped. Vision was normal. T. Hg. 24, pupil active. In October, 1925, the tension with Schiotz tonometer was 26 and 23, Gradle 33 and 15, Hg. 12 and 13. Eye grounds normal, vision 20/30 and 20/20 with glasses. Pupils active. Fields still showed a slight contraction in each eye.

Since 1916 a few additional cases have been reported.

W. W. Lewis* reports the case of a girl aged *Am. Jour. Oph., Vol. 5, pp. 540, 1922. 22 who presented evidences of a former interstitial keratitis in the shape of obliterated vessels in the cornea. Homatropine, used for estimating the refraction, precipitated an attack of glaucoma. Only one drop of homatropine solution, three per cent, was used. The eyes were inflamed, very hard, vision reduced to perception of light and corneae steamy. These symptoms disappeared in twelve hours under eserine, hot applications and sedatives. The subsequent history, after a few days, was not known.

It is interesting to note that one of my cases had evidences of a former interstitial keratitis.

Lindner* reports attacks of glaucoma after the instillation *Klinische Monatsblaet fur Augenheilk. 1925. 75. p. 478. of homatropine.

The first case presented by Dr. Lindner concerned an old woman eighty-four years, with thrombosis of a lateral branch. The glaucomatous attack occurred on the evening of the same day, although precautionary measures had been taken through twice repeated instillation of pilocarpin, and could be relieved only after energetic employment of myotics agents. In the other case, a man aged forty-four years, homatropine was used, in the presence of a moderately deep anterior chamber, for the skiascopic determination of hypermetropic astigmatism. The glaucomatous attack produced thereby could not be relieved by means of pilocarpin but the increased pressure was relieved by puncture. "The relative rarity of such cases had probably

led to a certain lack of caution in the employment of homatropine in recent years."

There are several points that appear from a persual of the reported cases.

1. This form of glaucoma is more common in women. Of the eleven cases mentioned by Gifford in 1916, eight were women. Both of my patients were women.

2. The possibility of this unfavorable result is small. Millions of people have had homatropine put in their eyes and very few ever developed glaucoma as a result of it.

3. Homatropine and other mydriatic drugs can not be said to cause glaucoma. They merely precipitate its development in eyes predisposed to its occurrence.

4. In the use of eserine and other myotics after the mydriatic has served the purpose for which it was instilled, we have an almost certain preventive of any trouble of this nature. Therefore the occasional occurrence of glaucoma is no more a reason for not using mydriatic drugs than is an occasional death from a general anesthetic a reason to withhold these blessings from those who need them. The dangers in each instance should be recognized and precautions taken to prevent their occurrence.

5. In more than any other form of glaucoma, that which follows the use of mydriatic drug seems to be favorably influenced by myotic drugs and medical treatment.

6. It should be the invariable rule to instil a myotic drug in the eye after the test is completed for which the mydriatic was employed.

The other case is of quite a different character.

Case 3. Mrs. H., aged 41, was seen in 1904 complaining of headaches, for which she had worn glasses for six years. From subsequent observation it was found that she was of a nervous temperament and easily disturbed, and in the twenty years that I have known her as a patient she has shown many and varied symptoms of functional disturbance. When first examined she had a baby less than a year old and since menstruation was re-established she had complained of ocular and occipital headache. The vision had always been poor in the left eye, but she had never squinted. The eyes were normal inside and out. Vision O. D. 20/20, Manifest H. +1.75. With +3.00 she read J1. O. S. 18/200, not improved by glasses. Binocular vision and 4 exophoria. June 24, 1904, homatropine and cocaine drops were instilled five times for refraction, the homatropine in the strength of twelve grains to

the ounce. The test gave O. D. +2.25 equals 20/20. O. S. +5.50 +1.00 ax equals 20/80. Three days later she accepted full correction and with +1.00 added she read Ji and Jio. August 11 she complained that distant vision was blurred and it was necessary to reduce the glass .50 D to get 20/20. It was then noted that the right pupil was still dilated to the fullest extent, that is as widely as when the homatropine was first instilled. The eye was normal as to tension, field and vision. Eserine contracted the pupil, but one drop a day did not keep it down. Reducing the distant glass to +1.75 relieved the head and eye pains. In November, five months after the drops were put in, the right pupil was still 7 mm. in diameter and inactive. The left 4 mm. and active. There was a slight variation in the pupils. In December, 1905, 4 and 3 mm. and with +1.75 she read Ji and 20/20. 1906, 4 and 3½; 1907, 5 and 3½, vision O. D. +1.00 equals 20/20, and Ji with +2.00. 1909, pupils 3½ and 3, vision 20/20, and Ji with +2.00. 1909, pupils 2½ and 3, vision 20/20 and Ji with +1.50. 1910, same. 1919, 4 and 3 mm. 1921, 4½ and 3, distant vision same, +3.00 Ji. No other symptoms appeared, tension, eye grounds and visual fields remaining normal, vision as recorded. In 1923 during my absence from the city a colleague diagnosed glaucoma in the left eye and performed an iridectomy. The diagnosis must have been based on the poor vision, which had always been present. Her hospital record was to the effect that the right pupil was normal, which it had not been for twenty years, and there was no note of fundus changes or other symptoms upon which the recorded diagnosis of "secondary glaucoma" was made. Fortunately the poor eye was selected for this display of operative enthusiasm. In June, 1924, the condition of the right eye was unchanged. February, 1926, right pupil 4½ and inactive to light or accommodation. Left pupil, the round part is about 3½ and inactive, vision 20/20 and 20/60 with glasses. Reads Ji O. D. with +2.50 added. T. Sch. 22, O. U.

This case is unique in my experience and I have only found one case in the literature at all comparable to it. Decker* reports *Am. Jour. Oph. Vol. 7, p. 443, 1924, the case of a man, aged thirty-six, who was refracted under homatropine. One drop of a 1.25 per cent (six grains to the ounce) solution of homatropine was put in the eyes every fifteen minutes for three doses. The refractive error was O. D. +1.50 +.50 ax 90. O. S. +1.50 + 1.00 ax 85. There were fine opacities on the posterior capsule of the right lens, the eye being otherwise normal. The pupils were normal in size after ten days and reacted to light but not to accommodate, but the accommodation was permanently suspended, or at least it was still absent fourteen months after the homatropine was used. A case of Dr. Harold Gifford's reported to Dr. Decker in a personal communication is mentioned in which

the accommodation had not returned after two or three years.

In my patient presbyopia was already established and the muscle fibers of the iris were affected almost entirely, the ciliary muscle escaping. Though the drug was used in both eyes, only the right or better eye, was affected permanently.

In a few cases, four to be exact, marked constitutional symptoms have been observed in patients who had some mydriatic drug instilled into the eye. In three of these patients the mental disturbance was most pronounced, and it is probable that an error occurred in using hyoscin instead of homatropine, due to a mistake in labels on the part of the manufacturer. The symptoms were not serious and soon passed away. These cases are mentioned because they are the only ones in my observation, except those mentioned in this report, where unpleasant or unlooked for effects followed the use of mydriatic drugs.

DISCUSSION

DR. G. C. SAVAGE, Nashville: I know that Dr. Ellett knows that the optician is going to make capital out of what he has in his paper. I want to suggest to him how he may counteract that statement. There is a stereotyped statement which I make to my people when they object to the use of a mydriatic; that is, any attempt at correction, where the accommodation is active, without the use of a mydriatic is guess work. If I were a lay optician I would be compelled, in honesty, to say this, but I would add a little to it. One addition would be that guess work is as good as any when it hits. Another, if I were optician, I will try to make it hit.

DR. HARRY GRADLE, Chicago, Ill.: Offhand I might add three cases to the list of glaucomas from the use of homatropin that Dr. Ellett has reported. Two were in the hands of other colleagues and one was in my own experience. The first was in a man of 60, who developed glaucoma in one eye following the use of homatropin. It could not be controlled and eventually had to be operated on. Today the eye is quiescent though vision is reduced. The other was a woman of 35 who developed glaucoma after homatropin. The doctor was able to control it for a while but was finally obliged to do a double iridectomy. The condition is now quiescent but vision is reduced. The third came under my own experience and was extremely interesting. About four years ago a

woman of 35 came in complaining of headache. Under the usual regime I put in homatropin, two per cent, one drop every five minutes, for six instillations, refracting in about forty-five minutes. About one-half hour after she left the office she returned with a violent headache. I found a hypertension. The eyes were not red, there was no hypermia but both eyes were quite tense. There were vacuoles to be seen in the cornea with the slit lamp. The anterior chamber was rather shallow and the lens were pushed forward quite markedly. The fundus could be seen easily but there were no changes. Vision was markedly reduced. I worked with her for about fourteen hours, using pilocarpin, massage, cold applications, and eserine every fifteen to twenty minutes and finally the pupils came down and the tension subsided. I gave her pilocarpin for several years and eventually she stopped using it. She has had no further attacks of hypertension since then. We have not since dilated her pupils. A year ago last February she came in and I made a notation that the left disk looked little bit pale, though the field of vision was perfectly normal. I did not see her again until August when she came in with the vision of the left eye reduced to approximately one-tenth. The field was contracted. The other eye was perfectly normal. I sent her for a neurologic examination but no definite diagnosis resulted. I was inclined to believe that she had a frontal lobe tumor pressing on the optic nerve, which was carbonated by the Mayo Clinic. There have been no symptoms in the right eye. There are no localizing symptoms that will allow us to make a diagnosis of tumor sufficient to justify operation. If there is any connection between the nerve head atrophy, glaucoma and homatropin I do not know, but it has been rather interesting to watch this case over a period of four years.

Only a small percentage of cases will develop hypertension after the use of homatropin. In the last seven years I had about 15,000 patients under homatropin and only this one patient developed hypertension. How many years more we will go without developing a case I do not know, but the percentage is very small. We do not use a miotic routinely after a mydriatic; but I believe it is best to use it in patients after thirty-five or those with hyperopia of one or two diopters. I do not believe anything is to be gained by the use of pilocarpin because it subjects the patient to considerable annoyance if used strong enough.

The paper of Dr. Ellett is very interesting because it makes you think of what can happen. I believe if we all take it seriously and watch our patients carefully after mydriatics we will have less glaucoma developing that can be attributed to eye examinations.

DR. D. HARBERT L. ANTHONY, Memphis: I have seen a few cases. I believe the thing that causes the trouble is not the case that has a tendency to chronic simple glaucoma but the tendency

to put drops in the eyes regardless of the patient's age. If the patient develops increased tension, I think he is fortunate if you find glaucoma before he loses his full vision. If you find increased tension you can institute proper treatment to overcome the tension and thus save his vision. Because a patient gets an increase in tension I do not think we should hesitate to do the thing that is necessary.

DR. P. M. LEWIS, Memphis: I think the point Dr. Anthony brought out is a good one. I usually make it a rule to dilate the pupils in any patient having a vision of 20/50 or under that cannot be corrected, no matter what the age is unless the tension is elevated. I have seen two or three patients have increased tension following the use of homatropine and cocaine that were not obviously glaucoma cases. In one patient with small pupils there was no marked evidence of glaucoma and we might have missed the diagnosis but the mydriatic caused increased tension, which was controlled by eserine. It was a very early case of chronic simple glaucoma and the condition might have been overlooked. I would like to ask Dr. Gradle if he tried adrenalin to control his cases who developed an increased tension from cycloplegics.

Dr. Gradle: They were all treated with adrenalin.

DR. L. M. SCOTT, Jellico: This is a very important subject which Dr. Ellett has so ably presented. I feel that we should enter into the discussion freely, giving our experiences with the use of a cycloplegic. I have been using homatropin in combination with a four per cent solution of cocaine for over twenty years and have never, to my recollection, had any bad after effects in the way of hypertention. To be upon the safe side, however, I follow with a miotic in cases where the patient is forty years of age or over. I think the danger from a cycloplegic is more fanciful than real. It is the height of folly to think of trying to refract a child or a young adult without the aid of a cycloplegic.

DR. HERSCHEL EZELL, Nashville: I would like to ask Dr. Ellett if he uses homatropin at all ages and if not, what is the age limit.

DR. A. C. LEWIS, Memphis: The great advantage of using eserine after homatropin is that it enables you to get rid of the cycloplegia quickly, when this is necessary. We instill it three times at five-minute intervals and wait until the eyes stop jerking before allowing the patient to leave the office. The next day the patient can use the eyes safely and comfortably. We work on a great many bookkeepers and stenographers who do not want to lose much time. I think it is safer to use a miotic after a mydriatic in every case.

DR. G. C. SAVAGE, Nashville: I suppose it must have been the price of homatropin when I began to use it that led me to use a weaker solution than 12 grains to the ounce. It was seventy-

five cents a grain. From the beginning to the present my strength of homatropin has been eight grains to the ounce. I have used unhesitatingly ten drops in the eye in every refractive case of forty-five or under. After passing forty-five to forty-eight years, from two to four or five drops repeated every two to five minutes, depending on the length of time the patient has to spare and the time limit on me, is my regular routine. I have not been in the habit of using eserine in the eye after using homatropin for the reason, I suppose, that I have never been unfortunate enough to see a case of glaucoma traceable to the use of homatropin. I do not know whether the practice is a good one to follow. I use homatropin in every case of refraction unless there is a glaucomatous condition existing, which usually can be told. If I see any evidence of glaucoma, I would not use homatropin at all, but otherwise I would use one drop in each eye, not for the purpose of aiding in the work of refraction, but to give a full view of the crystalline lens. Often there is a beginning opacity in the periphery of the lens which, if overlooked, may lead to the full development of a cataract and to blindness. Whenever these changes can be detected early it is a fairly easy matter to prevent the further development of cataract, not to effect the absorption of any opacities that may be in the lens at the time, but to keep the nutrition of the lens in good condition so as to prevent the full formation of a cataract. I recall two cases. Dr. W. A. Atchison, some

seven years before his death, was developing cataract in the periphery of his lenses. I gave him the treatment which I have been following for twenty-five years and seven years later he died suddenly in his chair one morning while reading the newspaper. Without this treatment he would have been blind three or four years before his death. That is only one case among many. I have never seen a case of glaucoma chargeable to homatropin.

DR. E. C. ELLETT, Memphis (closing the discussion): To answer Dr. Ezell's question, I do not especially consider the age limit. I do not use a cycloplegic in all my cases of refraction. I do in cases in which it seems to me I cannot get a satisfactory test without it. My experience has been that presbyopia arrives much earlier than it used to. One of these cases I reported required at 41 the addition of one and one-quarter D to the distance glasses in order to read. You can read about these cases but it does not make the impression until you get one yourself. It is like sympathetic ophthalmia. Gifford reported three or four cases and they did not make much impression on me but after I had one or two myself I realized that they could occur. If we use a miotic after a cycloplegic we have done all we can do to prevent trouble. It is not usual to see any trouble because Dr. Gradle has had 15,000 cases with only one bad result, and Dr. Savage and Dr. Scott have had more than that with no bad results.

DIAGNOSIS AND TREATMENT OF THE PRIMARY STAGES OF SYPHILIS*

JOEL Y. ALEXANDER, M.D., Middleton

THE more I investigate the subject of syphilis the more I realize the importance of positive diagnosis and adequate treatment in the primary stages, as it is a fact that after serious damage has been done to the internal organs, treatment will not repair the condition, but in some instances will merely arrest its progress.

In the beginning, never under any circumstances should any venereal lesion be passed up as a non-infectious sore until strict investigations are made; neither should they be cauterized or dressed with calomel, bismuth, boracic acid, or anything until a positive diagnosis is made, because a lesion dress with any of the above mentioned dressings practically blots out a positive dark field examination. While under conditions like this, if you will have your patient clean up the lesion with soap and water, and then dress with a wet dressing of normal saline solution for twenty-four hours, perhaps that will bring out a clear dark field test.

I think at this stage of the disease the dark field test, especially the ink stain field, is the most dependable, convenient and simple test used by the syphilologist. It is true that the ink stain will not bring out to view more than twelve to fifteen per cent as many spiroes as a silver stain, so says the pathologist.

But to bring in plain view five or six spiroes to one microscopical field is as positive syphilis as if there were fifty to one field. Owing to the simplicity of the ink stain test, it is very valuable, as it does not require a complete laboratory equipment; merely a microscopic, glass slide, bottle of India ink and a cover glass. Put a mere speck of the excretion from the lesion

half the size of a wheat grain on your slide and then the same amount of India ink as near together as you can conveniently do so, and then place a cover glass over the two specimens and press down tightly; by so doing the ink and the excretion will mix and your slide is ready for immediate examination. Turn to your high power lens, put a drop of some pure refined oil, cedar oil is most frequently used, under your slide and one drop on top of your cover glass; lower your lens into the oil on your cover glass and you are ready for a focus. Regardless of the findings by the dark field test, we also take a specimen of blood for a Wassermann test, regardless of the stage of the disease. But as you know, the great majority of all blood tests for the first twenty or thirty days of the disease will give a negative reaction.

After a positive diagnosis has been made the urine is examined for albumin by the acidic acid test, by filling a test tube about two-thirds full of the urine and adding about one or two c.c. of a five per cent solution of acidic acid and then heated. If albumin is found, the urine is then examined microscopically for hyalin or granular cast. If casts are found, to express the severity of the condition the terms one-two-three or four plus hyalin or granular casts is used. In examining urine for casts it is not necessary to use any stain; simply place a drop of the urine on a slide and use the low power lens. If in one microscopical field there is from one to three casts in view, it is a one plus; if three to five, a two plus; five to seven, a three plus; seven to twelve, a four plus.

Should the patient that you are dealing with be in the latent stage or ulcerative stage, the urine is examined for sugar to make sure you are not dealing with a dia-

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betic condition. Test used for this is principally Fehling's test. Fill a test tube about half full of the mixed solution and boil over a gas flame, then add about one c.c. of the suspected urine. Should sugar be present the color of the solution will be changed from blue to yellow or reddish-brown, after boiling a second time.

I will not attempt to give the Wassermann blood test in detail, as it cannot be run successfully except in a fully equipped laboratory, so I will leave that to the pathologist. But I would like to warn against the over-estimated value of a negative Wassermann blood where you have a positive personal history and signs of syphilis.

When you take into consideration that the infection might be walled off from the blood stream or perhaps some deterioration of solution used in the test, or perhaps the specimen of blood might have been taken with a hot needle; or perhaps the patient was or had been under the influence of some alcoholic drink in the last few hours. All of these things, in the great majority of cases, will cause a negative reaction.

TREATMENT

Where the physical condition is good the administration of arsphenamine is begun at once and given at four-day intervals until twelve doses are given, the dose ranging from three-tenths of one gm. to six-tenths of one gm., according to physical condition and bodily weight. The average dose is about four-tenths of one gm. The first one or two doses are generally smaller than the average, to know if the patient has an idiosyncrasy for arsenic.

At the same time we begin intramuscular injection of some form of mercury, mercurous benzoate or salyoselate. Personally, I prefer mercurous, as it seems not so toxic and does not produce as much pain when injected and is not so apt to produce nodulation. A dose of mercurous ranges from one-half gr. to one grain at two-day intervals until eighteen doses have been given. Regardless of what form of mercury you use, you are more than likely to produce a sore mouth or salivation that may be prevented to a great extent if you

will have your patient wash his or her teeth three times a day with a brush and some good tooth paste, followed each time by some disinfectant or antiseptic mouth wash. We, in the clinic, principally, use Dobell's solution. Should any further toxic symptoms arise, such as abdominal cramps, we generally give from one to two drams of paregoric in about one ounce of mineral oil as a temporary relief and then the urine is examined for albumin and casts. If found in a two or three plus casts, the mercury is omitted and sulph arsphenamine intramuscular substituted for the arsphenamine intravenously, because it is not thrown on the kidneys so suddenly and at the same time we give by mouth ten to fifteen grs. of sodium thiosulphate and the urine is examined twice a week instead of once a week.

If at any time the urine shows a four plus hyaline or granular cast all the arsenicals and mercury are stopped at once and the patient treated symptomatically. In the latent stage of the disease with a chronic ulcerated condition and a positive personal history of syphilis, but a negative blood and urine negative for casts in some cases we got good results from intravenous injections of Flumerine given at four-day intervals in connection with a saturated solution of potassium iodide given by mouth three times a day.

It was the general opinion of the clinic that it was best to make a careful microscopical examination of the urine before the administration of each dose, as it seems to have a rather hard kick at the kidneys.

It is true I have not offered reference or indorsements by giving names, journal, volume, page, etc., but personally I consider myself principally indebted for the teachings set forth in this reading to the U. S. P. H. S. Clinic of Hot Springs, Arkansas, Dr. O. C. Wenger, director, and Dr. H. O. Proske, pathologist.

DISCUSSION.

DR. O. P. WALKER, Memphis: In considering syphilis several outstanding facts are apparent. First, the necessity for an early diagnosis. Second, the importance of efficient treatment, and

the evil of the single dose treatment or small doses in which the disease is not controlled. Third, the importance of following up the arsenical solution with mercury or bismuth in sufficient doses and then afterwards follow up the case for a year or more by blood and spinal fluid tests.

In starting the examination of a syphilitic sore, if we can get them right at first before any drug has been applied—it is usually applied before they see the doctor—the diagnosis should be made in about ninety per cent of the cases.

If we make a diagnosis at this time and start our treatment and push it, there should be only a small number of uncured cases. I think it is important to follow up these cases and push the treatment for the first year, and push it hard. I believe in giving the cases all they will stand, the arsphenamine in two or three or four-day intervals, and then after the arsphenamine course to come right along with the mercury or bismuth. I don't give it long with the arsenical course as a rule. I had trouble once or twice doing that, so I quit it. If they are pushed right along, and the courses alternated and the blood and spinal fluid watched during the first year, we will cure our cases. But they must be kept under observation and treatment for three to five years.

DR. M. G. SPINGARN, Memphis: Every time I listen to a discussion on syphilis or read the subject of syphilis and the treatment, I sort of shudder. The reason for that is this: Our treatment is nearly always insufficient. It is not always our fault. How much treatment should a patient have in a primary stage is one question which we have got to consider.

As the doctor before me spoke about the administration of spasmodic doses of salvarsan, that is a crime to civilization. Give it and give plenty. I do not believe as a personal opinion that neo-salvarsan is worth anything at all. Stick to your salvarsan—the straight drug. How many doses are you going to give is a question that your patient asks you. "Doctor, how much have I got to take until I am well?" "I don't know."

There are several formulae that you may follow. And that is, some may give four, some may give five, some may give six, at intervals of a few days apart. Then repeat it within thirty days or sixty days and repeat it again. It does not matter whose method you follow, but the first thing is to give plenty of your salvarsan in conjunction with your mercury. Never leave your mercury off. Make your patient understand what the disease may result in if he does not take his treatment the first year after the primary infection.

As stated, this is not always easy. He takes his first few doses, and when he is free of what he can see, it is good-bye and good-night. He cares nothing more. Occasionally you will get your patients to follow it out.

This is just a plea to give plenty of your drug—that is, your salvarsan. Stick to it when you can, and plenty of mercury during the first year of the disease.

Thank you.

DR. JOEL Y. ALEXANDER, Middleton (closing): As to giving the mercury and the arsenicals in connection, I have been treating hundreds of cases in that way with the clinic at Hot Springs. One reason we do that, if nothing more, is because it is hard enough to control your patient and hold him long enough anyway. We make it a rule universally to give all cases of syphilis twelve injections of one of the arsenicals and eighteen of mercury. Two a week of the arsenical and three a week of mercury. And you can readily see that that would take six weeks. That is about as long as you can hold any man. And as to when that should be repeated, that is determined there by the Wassermann blood test.

I spoke of flumerin. We use that principally as a complement, so to speak, to the regular arsenical and mercury course where they had already received twelve injections of the arsenical and eighteen of mercury. If they then had lingering symptoms of syphilis, we would continue if the patient would stay, with weekly injections of flumerin until we would give twelve doses of that, and then repeat the Wassermann blood test.

It is a fact that after giving the twelve injections of the arsenical and eighteen of mercury, the great majority of the four-plus Wassermann bloods will show negative the first week after its administration. But the next question is, Will it be negative sixty days later? That is why we like to continue with flumerin.

Do not misunderstand me to mean that a negative Wassermann blood test immediately after a full course of treatment in this manner would mean cured of syphilis in any sense, but I would advise a ninety-day recess of all treatment and then repeat the Wassermann blood test, and so on each ninety days for the first twelve months and then repeat the regular course of mercury and pot. iodide regardless of the blood findings.

The second year, if the tests remained negative, I would advise two blood tests at six months' intervals and then repeat the regular course of mercury and iodide, but should any of these tests prove positive, would repeat the more heroic treatment mentioned and proceed as above mentioned with the first positive findings.

CONSERVATION OF THE NEW-BORN*

J. C. AYRES, M.D., F.A.C.S., Memphis

UNTIL we have educated our people to the importance of autopsies on all our dead babies, we cannot be sure as to the cause of death nor positive as to where the responsibility lies; but a casual study of our hospital records reveals the fact that a large percentage of these deaths are connected with one or more of the following conditions:

1. The labor was very short and violent or very long and tedious.
2. Oxytoxics were used before the delivery of the baby.
3. A narcotic was given near the time of delivery.
4. The mother was under prolonged anesthesia.
5. Forceps or version was used.
6. Violent means were used to resuscitate the baby.

We have always recognized the danger—to the mother—of short violent labor, but have not thought as much of the danger to the child. Fortunately, we have at hand, in chloroform and ether, agents with which we can control this condition.

As to the shortening of long tedious labors we have a more difficult problem, in which we must be guided entirely by the condition of mother and baby. All of us need more training in the study of the foetal heart sounds, as that is the only means by which we can tell when the baby is in distress. Unfortunately our methods of shortening labor are unsatisfactory and sometimes dangerous. It is a matter of fine judgment as to when and how we shall interfere.

The use of ergot as a means of shortening labor was abandoned many years ago, but peturtary extract had quite a run in more recent times until it fell into disrepute on account of its danger to the mother.

Very recently it has been shown that given before the birth of the baby it might produce asphyxia by contracting the uterine muscles to such a degree as to cut off the blood supply from the placental site.

There are some other drugs, like quinine, that, while safe for both mother and child are, when used to hasten labor, of very doubtful efficacy.

The injudicious use of opiates near the time of delivery has undoubtedly caused many infant deaths. If we will study the change that takes place in the method of oxygenation immediately after birth and remember the physiological action of opium we will see why this is. The most powerful single action of this drug is to paralyze the respiratory centers. So long as the placenta is in situ and the cord uncut, the baby can stand large doses, but as soon as it is dependent upon its respiratory organs, a very small dose may prove fatal.

Chloroform and ether as anesthetics are relatively safe, insofar as the child is concerned, but nitrous-oxide and ethylene have the common objection of prolonging the blood clotting time—the latter more than the former. Either of these gasses asphyxiate if used with too little oxygen. Ethylene has the advantage that we can use a higher percentage of oxygen in procuring the same amount of anesthesia.

It is a matter of fine judgment as to when we should resort to operative delivery and what operation should be used. The accoucher should conscientiously consider his own skill in the different methods before making his choice. The teaching of some of our great obstetricians, to the contrary notwithstanding, we know that no method of forced delivery is as safe for mother and child as normal labor and should be used only when special indication demands.

It is to the shame of our profession that

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the babies lost through the use of forceps and version are nearly always due to a lack of knowledge of the position of the child, the anatomy of the passage or the mechanism of normal labor. I cannot appreciate the mental attitude of the otherwise honorable and efficient doctor who will deliberately apply forceps to a tender baby's head and without the slightest knowledge of any of these points, drag that head—not along—but through the patrum canal. We have all heard good men say that they cannot tell, with any degree of accuracy, what position the foetus is in.

This situation is without parallel in the whole realm of medicine. What doctor would have the temerity to treat a medical or surgical case and admit that he couldn't make a diagnosis in at least a decent percentage of cases? It would be so easy for the average intelligent doctor to familiarize himself with these points that there is really no excuse for him not to do so.

Some cases of delayed delivery are due to rigid unyielding perineii. These can and should be relieved either by episiotomy or the ironing out of the perineum by the method of Potter.

We have often heard it said—and no doubt made the statement ourselves—that the baby suffers absolutely no risk when delivered by caesarean section; and yet we know that a considerable number of these babies are very hard to resuscitate and some of them die. There are two or three points in regard to the care of babies in normal delivery that we seem to overlook in doing a section. The routine giving of morphine or some other opiate, before delivery, should be abandoned for the reasons stated above.

For some unaccountable reason we seem to feel that in doing a section we should race against time and in doing so are apt to tie and cut the cord immediately upon delivery of the baby instead of allowing the little fellow time to make his adjustment from placental to lung circulation.

This brings us to the last and most important part of our subject. After the baby is born give it a chance. It is a wonder that any of our babies survived the

methods of resuscitation taught and used by all of us, in the past, and still used by many. The custom in vogue among the ancients of killing off the unfit babies had nothing on us when it came to helping along with a survival of the fittest. To see a big husky doctor spank and mash a new-born and duck it in hot and then cold water—to see him swing it over his head and bend its little spine until the head and pelvis met, makes us wonder why we did not change our practice long ago.

Use ordinary care to keep the fluids out of the baby's mouth and throat and be in no hurry to tie the cord. Remember that as long as the cord pulsates vigorously the child does not need to breathe. After the cord is cut some one should watch the baby closely and if it gasps occasionally leave it strictly alone. If it shows no tendency to breathe and the heart beat begins to slow down breathe into it either by mouth to mouth or through a small catheter placed in the trachea after the method of Potter.

The question of pre-natal care, while of the utmost importance in the conservation of the life of the new-born has, in this short paper, been purposely avoided, as has the tabulation of any long series of statistics or the discussion of rare and obscure causes of death. The writer has run the risk of being considered academic or even elementary in the hope of bringing to this body a few reminders of the obvious.

DISCUSSION

DR. K. S. HOWLETT, Franklin: This very short and interesting paper is a very important paper. I could not keep down some regrets that a large number of physicians throughout Tennessee who ought to have heard this paper were not here to hear it. That is the unfortunate part of some of these very practical papers.

Now there are many points brought out even in this short paper that could, to our profit, be emphasized. One of these that I will take time to mention is Potter's idea of ironing out the perineum in practically all cases of obstetrics especially in the primipara. I really believe, in reading Potter's books carefully, that is the most valuable if not the only valuable idea I got from reading his book advocating performing version in at least eighty per cent of all cases.

Of course for a long time we had been somewhat impressed with the idea of dilating the per-

ineum manually as thoroughly as we could before applying forceps. But somehow it never occurred to me how much good we could get from doing that same thing in the case of ordinary obstetrics. And yet I have found, since getting the idea from Potter's books, that often times I feel sure that I have avoided a tear as well as a prolonged labor by doing this same manual dilatation of the perineum that Potter advises before his version.

I think that is one point in this paper by which the general practitioner could be benefitted.

Then another thing that nearly all of the old practitioners who practice in the country and do not attend medical society meetings are very much in need of is the last point brought out by the essayist; and that is not to use violent means to resuscitate the baby.

I find I often times have to hold the Doctor off of the baby that is not breathing to suit him and not crying in order to keep him from using these violent means, while all of us that try it know where we have a baby where the cord is circulating, or where there is a gasp every now and then that the baby is going to come around all right if you just let it alone.

I don't think there is any doubt but quite a number of babies were sacrificed to this idea that the doctor must be very busy, and to the fact that this spectacular way of being very busy made an impression upon the family. It would have been better for the baby if he had gone at the resuscitation in a very much more quiet way.

DR. E. R. ZEMP, Knoxville: This is a paper small in quantity but very large in potentially good ideas.

I take it for granted that most of you here are general practitioners like myself. Consequently this is a timely paper and one that we should well consider. There is a whole lot of difference between meddlesome midwifery and helpful midwifery. Meddlesome midwifery is always bad for both mother and baby. But helpful midwifery is beneficial to both.

Sometimes it is very hard to decide which is which. We may err in our judgment, it is true. But it is best to be conservative and in the vast majority of cases we find that the results are much better than for those who rush in even where angels fear to tread.

Undoubtedly many babies die from over-zealousness on the part of the physician. Many of these could be saved by just the simple outline of treatment that the doctor has given us.

There are, however, one or two statements in his paper that I cannot let go by unnoticed, and the first is that pituitrin has fallen into disrepute. I think not, doctor. I think pituitrin is on a better and more firm foundation today in its use in obstetrics than ever before. I will admit that injecting into a labor patient one c.c. of pituitrin has fallen into disrepute, and justly so. But

pituitrin rightly administered is certainly a God-send to both mother and doctor. But it should be used in very small doses, two or three minims, and the pains just slightly exaggerated and not pushed into a fury, as they very often are by larger doses.

And then I am very prone to believe that there are physicians who cannot make out the position of the child; that is, if they have practiced obstetrics for any length of time, especially if forceps are being considered. If he can't make it out in any other way he can put his hand in and feel the child's mouth or ears or feet or whatnot. He can insert the whole hand in the vagina. And then surely you will have no difficulty in telling the position of the head. And surely you would not try to use forceps without knowing the exact position of the head, because you are always working in the dark, and very apt to produce serious trouble.

The simple methods of resuscitation are undoubtedly the best. About a year ago I came across an article that I decided to try out in babies that were very difficult to resuscitate, and where the heart was gradually slowing down almost to the point of desperation on my part, and that is the injection in the buttocks of one-twentieth of a grain of lobelin. This drug has not been on the market very long but it certainly is a powerful resuscitator and powerful stimulator of the center of respiration.

In the two cases, that I used it, it brought only the most pleasing results. I think it is perfectly safe and much more efficient than the rough usage that these babies generally get. It will start up a respiratory center that is practically dead. The dose is one-twentieth of a grain.

DR. JOHN S. CACYE, Nashville: I have been particularly interested in this paper and wondered before I came if he was going to touch on things we could not control, such as the syphilitic types we frequently see that cause the death of babies.

I was very glad when he brought out what he did with reference to the part we may play in conserving the newborn. All of us have had instances in which we have been exceedingly puzzled to know the cause that has brought about the death of a baby. We sometimes meet up with conditions that seem to be beyond our control.

To elucidate what I mean. Some time ago I had a very large woman who was to be confined, and throughout her pregnancy she had severe attacks of colic of a renal type. She had a stone in the left kidney that had been properly diagnosed. Because of her pregnancy it was not deemed wise to have anything done surgically. Eighteen hours before labor set in she had one of these severe attacks. And it always necessitated at least three-fourths of a grain of morphine to relieve her of these attacks.

Eighteen hours after the injection of the morphine labor set in, but she was delivered within a space of six hours. The labor, as I could see, was as near normal as any patient I had ever attended, and yet that baby did not breathe. The question has been in my mind all the time as to whether the morphine given her eighteen hours before produced the death of that infant or not. I didn't think so, although I never was quite certain as to whether it did or not.

She insists that within an hour or two before the birth of the baby she felt the movement, and now the question in my mind is what course should one pursue in a combination of that sort? It was a big healthy baby and should not have been lost. But I know of no way in which I could have prevented that loss. A few experiences like that in a man's work will make him wonder just what will be the possibilities that he may learn from a paper of this kind.

Another thing that I am glad that the doctor insisted upon is abandoning active rough measures in resuscitating the child. I know it is quite a temptation when the baby is born to cut the cord immediately. But I am sure from my own observation that all of us will be greatly rewarded if we will do just as the doctor suggested, just sit still and wait. In a few minutes you will be rewarded by seeing that baby breathe. As long as the cord is pulsating there is absolutely no danger of the loss of that baby.

DR. J. C. AYRES, Memphis: By way of apology for the extreme shortness of it, this paper is more of a sermon than a scientific treatise, and

it has been said that no converts are every made after the first fifteen minutes of a sermon.

There are lots of things you can think about that would kill a baby that we did not go into here. Things that make indications for hasty delivery necessary, like prolapsed cord, and dozens of things that if recognized would necessitate haste. I was simply discussing the methods.

I think the doctor's criticism of my statement as to pituitrin is justified. But when you are fooling with a drug as dangerous as pituitrin and as unstandardized,—either the drug is unstandardized or the patients are—you can give some patients two or three minims and get alarming contractions of the uterus—you must be very cautious. Pituitrin is a dangerous drug.

We all use dangerous things sometimes, under very careful watching, and under carefully graduated dosage. That is a just criticism of the positive statement I made in this paper.

I want to emphasize one of the points I have in my mind that was in the paper, but none of the men discussed. And that is the point of preliminary hypodermics, especially in caesarian section.

I hardly ever go in to watch a general surgeon do a caesarian section as I am only able to see about half of the operation. They ask me to go ahead and see if I can resuscitate the baby. They usually give preliminary hypodermics, and when they do they have delayed respiratory mechanism. That is not alarming, if you recognize what you are dealing with and have some form of insufflation or some artificial respiration over the period of time necessary.

EMPYEMA*

LYLE B. WEST, M.D., Chattanooga

THE subject of empyema occurs to me from a realization that the profession, as a whole, is slow to accept the new, and loath to forsake the old, and naively called "tried and true methods."

My authority is the findings and conclusions of the Empyema Commission of the United States Army during the World War, which have been delightfully presented with the addition of experimental data by Evarts A. Graham, from whose work I draw extensively.

The majority of empyemata, one-half to two-thirds of the cases, are caused by the pneumococcus, and follow pneumonia; the streptococcus is responsible for about one-fourth of the cases seen in civil practice, and a much larger fraction with the influenza epidemic of 1917-1918. As a result of this opportunity of studying extensively and under proper control a large number of cases, certain principles have come into general recognition and have resulted, or should have resulted, in rather standard treatment.

The average mortality of empyema of the military camps early in the epidemic was thirty per cent, while in the hands of the Empyema Commission this was reduced to four per cent.

Pneumococcus empyema is almost always a complication of lobar pneumonia and is usually not recognized until after the acute stage of the pneumonia has passed. That is, at a time when much of the exudate from within the lung has disappeared and thus the vital capacity has returned more nearly to normal.

On the contrary, in the hemolytic streptococcus empyema, it is usual for a massive pleural effusion to form early, so early in fact that frequently the pulmonary lesion

is not recognized. The streptococcus interstitial broncho-pneumonia and lobular pneumonia, as described by MacCallum, are in the stage of "consolidation" with a greatly diminished vital capacity, at the outset of the empyema. Hence it is particularly important in the streptococcus cases to avoid an open operation, whose resulting pneumothorax would further embarrass respiration.

In contrast to the changes in the streptococcus cases are those found with the pneumococcus in which there is relatively less disturbance of the air-intake, with less cyanosis and dyspnoea and a much less rapid organization of the exudate.

Experimentation has conclusively demonstrated that prevalent conceptions of pneumothorax are erroneous. In the normal thorax the mediastinal structures offer so little resistance to changes of pressure that any change of pressure in one pleural cavity affects the other to practically the same extent. There is such an equilibrium that the two pleural cavities may be considered one. For instance, when one pleural cavity was inflated with air, at a pressure sufficient to support a ten cm. column of water, the other pleural cavity showed a pressure of about nine cm. of water or a mediastinal resistance of about one cm. of water. It has also been demonstrated that there is practically no difference in a bilateral pneumothorax and a unilateral open pneumothorax when the area of the two openings are equal to that of the unilateral opening. Old inflammation of the mediastinum with extensive induration results in a less permeable and more rigid partition between the two pleural cavities, making a late open operation in empyema more safe as regards respiratory difficulties. It has been a frequent and striking observation clinically and experimentally that the dysp-

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noea induced by an open pneumothorax is relieved almost entirely by closing the opening. As this procedure changes the conditions by merely making a closed pneumothorax instead of an open one, it becomes apparent that the closure of the wound is the important factor. In the open pneumothorax there is a competition between the glottis and the thoracic opening as to which will inhale the greater amount of air; in the closed pneumothorax it is only necessary to increase the inspiratory effort sufficiently to create enough negative pressure to inhale sufficient air to maintain blood aeration.

The ease of secondary infections of the pleura in open pneumothorax is too well known to deserve more than mention.

From the foregoing it is apparent that early open operation for acute empyema, with its open pneumothorax, will result in more hurt than help to the patient, and must be condemned as bad surgery. This is particularly true in cases due to the streptococcus.

Theoretically, the early establishment of continuous drainage with negative pressure or suction should have the advantages of keeping the pleural cavity relatively free of liquid exudate and organisms, aiding the expansion of the lungs as well as avoiding an open pneumothorax with its attendant dangers.

It is only just to state that a small proportion do well with repeated aspirations and without operation; this number amounted to thirteen per cent of the cases observed by the Empyema Commission, but repeated aspiration is not altogether without danger. When the space between the parietal and visceral pleura is narrow, it is very difficult not to injure the lung, perhaps carrying in virulent organisms with abscess formation.

If repeated aspiration and a deferred operation is chosen, the time for the operation is at the appearance of frank pus; this is usually three to four weeks in the streptococcal cases.

The type of operation, a rib resection or intercostal drainage, is the next considera-

tion and simple drainage is preferred. In doing a rib resection, the continuous suction is impossible and a pneumothorax is inevitable. Then, too, there is always the danger of osteomyelitis from the cut ends of the ribs, and the possibility of small chips of bone being dropped into the pleural cavity, at the time of operation or later, due to infection.

If simple thoracotomy is found not sufficient, the rib resection can be done later. Usually, however, the simple intercostal drainage is found sufficient.

The author has used a large silver tracheotomy tube with complete satisfaction; the skin is incised under local anesthesia, a needle is inserted to measure the distance to the pleura and a stab wound made with a narrow bistoury along the tract of the needle. The bistoury is removed and the metal tracheotomy tube and trochar is easily forced along the stab wound into the pleural cavity. The flanges of the tracheotomy tube are anchored to the skin by silk worm gut. The right angle curve of the tracheotomy tube makes the intrapleural portion lie against the parietal pleura and its smooth edge gives no discomfort. It is connected outside by rubber tubing to drain slowly under sterile water or into a negative pressure bottle.

In the successful treatment of any case of acute empyema there are two main objects: (1) the sterilization of the cavity, (2) the obliteration of the cavity. If we fail in these, healing does not take place and chronic empyema results. Without present knowledge, such mutilating operations as the Fowler-Delorme, Estlander, and Schede, except in very rare instances, are monuments to early neglect.

Failure of the cavity to become obliterated is due to an inability of the affected lung to expand and fill the pathological pleural cavity. This is largely because of the thick fibrotic coat of exudate covering the exposed parietal pleura and limiting the expansion of the lung. This has been repeatedly observed at autopsies on unhealed empyema. The early removal of this membrane prevents the formation of a thick

fibrous coat, which especially in the streptococcal cases, becomes organized early.

In neutral 0.5 per cent solution of sodium hypochloride (Dakin's solution) we have an agent which is ideal in empyema, for it not only sterilizes the cavity by the release of chlorine, but also by its solvent action on the exudate will effect decortication and thereby obliterate the cavity. With a closed drainage system the entire pleural cavity may be bathed in fresh Dakin's solution every two hours and slowly drained off.

The final point is a careful attention to nutrition; a mixed diet is insisted upon and is taken with avidity except during the early stage of fever. In this period much nourishment can be given as liquid, the carbohydrates are easily given as lactose by mouth, or lactose or glucose by enteroclysis. The importance of keeping carbohydrate supply up in acute infections is well known.

In conclusion, the essential points are as follows:

1. "Careful avoidance of open pneumothorax in the acute pneumonic state." Done by using a tracheotomy tube with closed connections.

2. "The prevention of a chronic empyema by the rapid sterilization and obliteration of the infected cavity" by the use of Dakin's solution.

3. "Careful attention to the nutrition of the patient" by forced fluids and a balanced diet.

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DISCUSSION.

Dr. C. R. CRUTCHFIELD, Nashville: The doctor has given you very well the essential points in empyema. There is just one point I would like to emphasize, and that is the great responsibility you take when you open an empyema too early, giving your patient a pneumothorax on top of his pneumonia.

In the army I saw a good many cases. As the doctor told you, the morbidity as shown by the Army Commission was thirty per cent in the early stages of the epidemic. It was later reduced to four per cent.

The thing that produced the mortality was the fact that the dictum went down that no case should be turned over to the surgeon until the medical men had repeatedly aspirated the chest and the pus was too thick to run through an ordinary sized needle. In other words, when the pus was so thick that on standing in a tube over half of it was pus. That meant that by that time the lung was anchored by the pleuritic thickening and if you opened the chest you did not get a massive collapse of that lung, with the resulting disturbance in the other lung. In that way the mortality was very greatly reduced.

It was also brought out in the army, especially where they had big empyema wards, that the Dakinization of these cases did not hardly repay you for the extra effort. In other words, it shortened but little the time of the patient in the hospital and the resultant morbidity.

The cases that were prolonged and the cases that did not seem to be doing well over the average length of time, those cases were Dakinized, and some of them were very much benefitted and operation was not necessary. In those cases the resistance had been built up by that length of time, and Dakinization seemed to take care of the pus probably better than it did at the early stage.

That one point the doctor emphasized about the lowering in mortality by the closed method, by treating with repeated aspirations with a small trochar, is especially valuable.

SYMPTOMS INDICATING NASAL SINUS SURGERY*

T. LYLES DAVIS, M.D., Chattanooga

THIS is a broad subject to cover in one paper, so I shall of necessity touch on what I hope are a few essential points.

When a patient presents for examination, a general survey of the case should be made, then a thorough history of past and present complaint. Under good illumination, make a thorough inspection of the nasal cavity, for deflections of septum, condition of turbinates, etc., then pack the nose gently with solution of cocaine or butyn with adrenalin. After waiting a few minutes the time is ripe for a more thorough examination. Now again inspect the nose most minutely, comparing findings with former examination, looking carefully for deflection of septum, contact, condition of turbinates, ethmoid area, and the possibility of discharge from sinuses. If there are marked deviations of septum or large spurs projecting from septum, a submucous resection is indicated and there is no operation that the specialist can perform where results are more satisfactory.

Contact of mucous surfaces creates moisture, which in time produces a discharge, commonly called nasal catarrh. This expression is a misnomer, as it is a definite symptom of pathology (contact) in the nose. If the deflection is high up in the ethmoid area, it is interfering with ethmoid and frontal drainage, and this type of patient will complain of a stuffy sensation in nose, giddiness, or a sensation as if they were losing their equilibrium, intermittent ache over nose and frontal area, pain and drawing sensation in eyes.

We shall next consider the ethmoid labyrinth and the pathological conditions to be considered are:

1. Acute catarrhal inflammation.
2. Acute suppurative inflammation.
3. Chronic catarrhal inflammation.
4. Chronic suppurative inflammation.

5. Chronic catarrhal inflammation with suppuration.

The acute conditions usually get well spontaneously, by treatment of the rhinologist, or terminate in the chronic type, so shall only consider the chronic form.

In the early stages of ethmoiditis, a condition resembling chronic coryza is evident. Exposure to colds, draughts, etc., bring on attacks of sneezing, watery discharges from nose, and ocular manifestations. When the disease is more advanced, the principal symptom is the headache in the region of the nasal base, above and below eyes, often radiating to the temples. The pain is not constant and depends on the congestion in the nose. Unlike the typical sinus pain, it comes at any time, and is not exaggerated by tobacco, alcohol or stooping. The discharge may be watery, straw colored, later assuming a purulent consistency. The olfactory function is frequently disturbed, and there may be cacosmia or anosmia, but more frequently an anosmia. Asthma and bronchitis are often an accompanying symptom. Frequently the eyes are affected with scotoma, neuralgic pains, ciliary neuritis, and photophobia.

The ethmoid labyrinth and frontal sinuses are anatomically so closely situated that many authorities say one cannot be infected without the other.

Frontal sinusitis is one of the most insidious and menacing troubles we have to contend with. Pain which accompanies the acute sinusitis usually forces the patient to consult the rhinologist, but when the acute stage abates the pain often disappears, the patient forgets the doctor, not realizing that the chronic infection is the real source of danger. Chronic sinusitis is unquestionably responsible for many of the diseases of focal origin next in importance or cause to tonsils and teeth.

Chronic disease of the frontal sinuses

does not arise spontaneously or as a distinct disease, but results always as a sequelae of repeated acute attack of inflammation. The greatest factor in causing chronicity is the disturbance of drainage.

The symptoms of chronic inflammation of frontal sinus may vary from total absence of pain to those as marked as the acute stage, though pain over the sinus proper in chronic type is rare, except during the stage of acute exacerbation. An outstanding symptom is disseminated headaches, which are increased by constipation, indigestible foods, tobacco, alcohol, mental and physical exertion, etc.

The diagnosis of chronic frontal sinusitis is often one of the most difficult problems facing the rhinologist, and a diagnosis frequently has to be made from the history of previous acute attacks, nasal findings, and discharge.

The accumulation in the sinus overnight is usually discharged in the forenoon, but on examination a secretion exuding from beneath the anterior end of the middle turbinate can be observed, unless there are marked changes in the nasal mucosa. Not infrequently there is an eczematous eruption around the alea, hypertrophy and congestion of middle turbinate, uncinate process and formation of polypoid growths.

The symptoms of chronic maxillary sinusitis are peculiar, due to the wide range of degree from mild to severe, which it may assume. The symptoms may be so slight that the patient is not aware of sinus trouble; on the other hand, there may be rather severe pains. Again, as in most all chronic infections, pain is absent, nor is there the sensation of fullness or sensitiveness to pressure as in the acute form. Headache of some type is a common symptom, the most frequent being supraorbital neuralgia or a general headache on the affected side. Some have a headache that becomes almost unbearable, and the headaches are intensified by alcohol, tobacco, stooping or straining. The secretion may be mucoid, serous, mucopurulent or purulent, depending on the type of infection. A foul odor may accompany the discharge, frequently the patient is aware of the disagreeable

odor. Unless there is distortion of the anatomy, the secretion can be seen where the ostium empties in the nasal chamber, but if there is much distortion, the secretion may be seen in unexpected places. Polyps and hypertrophy of the middle turbinate often prevents the pus from appearing anteriorly.

The patient may deny having any more than the normal secretion, yet admit that every morning by forcible sniffing or hawking, remove large crust from naso-pharynx, which had accumulated over night. Crust formation in the naso-pharynx is a diagnostic sign of great importance. Patients present themselves for treatment, complaining of dryness of throat and post-nasal discharge in the morning, when the entire trouble is in the antrums. Casocmia and anosmia are accompanying symptoms.

Children or young adults that are listless, dull, with poor appetites, probably with intermittent fever, giving evidence of local infections, often suffer from sinus infection. In cases of laryngitis, bronchitis, nephritis, pyelitis, myocarditis and asthma of obscure or undetermined origin, we have been removing tonsils and adenoids as the source of infection, when, in reality, the pathology is often in the sinuses.

In all ocular conditions, particularly of the chronic type, sinus complications should be considered.

Dr. Raco, who made an exhaustive study at the Jackson Bronchoscopic clinic of the "Concomitance of Sinusitis and Bronchiectasis," is of the opinion that sinusitis is directly responsible for all cases of bronchiectasis and bronchorrhea.

St. Clair Thomison, in discussing the complications of sinus disease, says: "The same cause (nasal and sinus) suppuration often explains the inveteracy of bronchorrhea."

Dr. W. V. Mullins (1), in his paper entitled "The Accessory Sinuses as an Etiologic Factor in Bronchiectasis," makes the following statement: "Patients with bronchiectasis will usually be found to have a well marked sinusitis, and the degree of the bronchial infection is usually in

proportion to the amount of sinus involvement."

Dennis (2) studied sixty cases of sinus diseases with complications, in which there had been some sort of surgical intervention, twenty-four of these patients had bronchiectasis, twenty-eight had asthma, eight had other troubles, such as nephritis, lung abscesses, cardiac involvement, and arthritis, and in practically all of the patients with bronchiectasis or asthma, the maxillary sinus was diseased, in forty-seven out of fifty-two.

Hirsch (3) studied sixteen cases of recurrent nasal polypi in which he opened the maxillary sinus and found an extreme catarrhal inflammation, in spite of the fact that irrigation was negative.

White (4) asserts that the most important diagnostic criteria are the history of almost incessant attacks of cold with profuse discharge, serous or mucoid discharge on the lateral walls, presence of a mucoid or purulent discharge on the posterior pharyngeal wall, periodic headaches, sometimes recurring at the same hour each day, tenderness on pressure over the involved sinus, visual disturbances, especially blurring or sudden loss of vision, with pain behind the eyeball.

Langier (5) presented ten out of 500 cases of sinus infection, in which the following were observed: Chronic bronchitis, pyelonephritis, articular rheumatism, tonsillitis, asthmatic and pseudo-angina attacks, general lassitude, fatigue, loss of memory and persistent cough.

Miller (6) found that in three patients dying from cardiac disease, empyema of the maxillary sinus was demonstrated at autopsy, although in no instance was sinus involvement recognized before death. Miller feels that the sinuses should be thoroughly examined in all cases of cardiac diseases, especially in chronic valvular infection and sub-acute bacterial endocarditis.

A study of his cases of maxillary sinus diseases leads Dennis (7) to the following observation: (1) Cough of a persistent character dominating the picture; (2) absence of positive findings by transillumination in eight of the cases; (3) positive find-

ings by x-ray in all the cases, against the doubtful findings by transillumination; (4) the presence of bronchial symptoms in most of them; (5) the low grade pharyngeal and laryngeal irritation, as compared with the amount of cough; (6) the presence of pus, easily demonstrable on the affected side; (7) the rapid diminution of the cough after the first removal of pus without any relation to the continuation of the secretion.

McMurray (8) states that a careful history and thorough nasal examination, especially of the middle meatus and the post nasal space, are the first steps. He holds that boggiess of the mucosa under the middle turbinate and persistent redness and hypertrophy behind the posterior pillar of the tonsils, extending upward behind the palate, are suggestive signs.

Worms (9) states that the diagnosis of chronic maxillary sinusitis in typical cases is easily made by unilateral rhinorrhea, nasal obstruction and subjective cacosmia. Pain is not present.

Johnson (10) likewise suggests that every patient suffering from any variety of degenerative disease should, even in the absence of suggestive symptoms, be subject to a thorough examination of the paranasal sinuses.

Macfarlan (11) lists the following visual vagaries which occur in sinus diseases: Visual confusion, floating specks, flashes of light, form or color, and often images. He also finds transitory symptoms of muscle imbalance, causing diplopia or long standing spells of poor vision or attacks of eye strain.

White (12) reports forty cases of optic nerve disturbance from sinus disease, which he had studied.

Dr. G. T. Brown (13) makes the following statement: Bacterial asthma may be perennial or seasonal in type. The seasonal type of bacterial asthma is frequently limited to the winter months, also commonly occurs during the changeable weather of early spring and late fall. One differential point between the spring and fall seasonal bacterial cases and pollen asthma is that the bacterial cases are more

irregular in their time of starting and stopping than the pollen sensitive cases. When itching of the eyes is met with, the case is not likely to be a bacterial one, as definite itching of the eyes is very suggestive of sensitization, in fact is almost always present where sensitization exists to some air-borne substance. The nasal secretion in bacterial cases is likely to be thick, sticky and frequently yellowish, in contrast to the thin, watery secretion, with a streptococcus infection. Likewise, the sputum in the bacterial case is more likely to be of a greenish yellow purulent nature than the grayish white, jellylike sputum of the sensitive asthmatic. The bacterial asthmatic usually has a great deal more cough and expectoration than the sensitive individual. In the bacterial type, as a general rule, cough initiates the attack, whereas in the sensitive type, shortness of breath and wheezing are the first symptoms noted and cough does not usually occur until the attack is breaking up. Between attacks, the bacterial asthmatic frequently has more or less cough and expectoration, whereas the sensitive asthmatic is usually free of these symptoms. In bacterial asthma the common time for the attacks to begin is in the early morning hours, whereas in sensitive asthma the attacks come on at any time, out of a clear sky, dependent, of course, upon ingestion of, or exposure to, some offending substance. Sensitive asthmatic attacks are usually more abrupt in their onset than the bacterial type. Bacterial cases are usually more susceptible to sudden changes in the weather than sensitive asthmatics. Bacterial asthmatics are also more subject to "colds," sinus trouble and the like than the sensitive patients. Bacterial cases will commonly give the history that they never have asthma except when they take "cold." The sensitive asthmatic also occasionally gives this history, when in reality the attacks are not due to taking "cold" at all, as the symptoms simulating a "cold," such as sneezing, running of the nose, watering of the eyes, are merely reactions of the mucous membranes to some offending substance. These sensitive cases may usually be differentiated from the bacterial ones,

however, by the fact that in the former the apparent "cold" and asthma may all develop within a few hours, whereas in the latter it usually requires several days for a head "cold" to get down in the bronchial tubes and produce asthma.

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DISCUSSION

DR. J. B. BLUE, Memphis: That good follows the proper doing of a submucous resection when indicated, is, I believe, beyond argument. We have all seen remarkable results and in the cases in which we do not get good results it is sometimes due to the lack of sufficient work at the time of operation. Of course too much must not be expected from this operation for it will not cure all nasal disease by any means.

I am convinced that it is well to thoroughly inspect the noses of children before doing tonsilectomies and adenoidectomies to see if there is any deviation of the septum or other nasal obstruction. The parents should be informed of the existence of such if present for so much is expected of the tonsil and adenoid operation. If they know beforehand that the removal of the adenoids will not completely remove the nasal obstruction the surgeon will save himself from censure. This brings us to the point of doing surgery on the septa of younger children. Personally I have never done any surgery on the septum of a child except in traumatic cases. Where there is marked deviation and breathing obstruction I have unhesitatingly operated on this type of case. I have done several and my results have been good.

The essayist mentioned the fact that at one time examination of the nose will show a deflection of the septum with no symptoms and later the patient will complain of the nose giving trouble. I have seen this a number of times. I have seen them for four and five years with no symp-

toms and later signs of ear, throat or other trouble referable to the deviation will show up.

Regarding Dr. Davies' paper there are just one or two things I wish to mention. One is the eye symptoms that occur from nose conditions. One sees eye complaints which are not relieved by glasses or by other ocular or general therapy but restoration to normal is accomplished by correction of the nasal defect.

Referring to the maxillary sinuses where there is relief sought from chronic infection, if the patient has had dental work done in this region be on the lookout for foreign matter either cotton or a portion of a tooth within the antrum which may cause the persistence of the discharge.

DR. ROBERT SULLIVAN, Nashville: I have only a word or two to say, that is, that most of us are far more conservative on septal surgery than we formerly were. I have not been doing ear, nose and throat work many years but from the number we are doing in Nashville, I believe the majority of men are doing fewer septal operations. I believe that is not from conservative teaching but from the fact that we did too many septal operations that were not indicated. The mere fact that the septum is out of line and yet you have a good breathing space on each side, should not lead us to do an operation. One or two indications for resection are a definite blocking of the nares and pressure, as from a deviation high up against the middle turbinate causing headache. The other, a very important one, is where you have a definite sinusitis that you cannot treat correctly without removing the deformity of the septum. I believe that that should be done.

I believe the most important thing of all is preventing deformities of the septum. So many can be prevented. So few of us see fracture cases. The general surgeon gets them first and the chances are if we could get these cases in the beginning we could correct the fracture better than the general surgeon and the patient would not later require a submucous resection.

The other thing is the dental end, I do believe that orthodontists are doing a great deal of good in widening the arch and preventing the high arch. A wider arch gives more breathing space. I am doing fewer septum operations than I formerly did.

DR. JOHN J. SHEA, Memphis: The indications for sinus surgery should be divided according to whether the pathology is acute or chronic. When it is acute the surgery is for the relief of symptoms, whereas when it is chronic the surgery is done to remove a danger. Pain is the principle symptom for which sinus surgery is attempted during the acute stage, though fear of extension into the orbit or cranial cavity is graver indication when present. I do not procrastinate with antral infection for it is so simple to make an opening under the inferior turbinate and insert a

rubber tube into the antrum and hasten the cure of the infection. If any external signs of spreading appear during the course of an acute frontal sinus I make a small external opening through the floor of the frontal sinus at the inner angle and insert a rubber tube into the frontal sinus and drain it externally. If there are no external signs I wash the sinus with a frontal catheter each morning when the pain begins. This pain is due to a vacuum which forms behind the escaping discharge and if broken will promote drainage and hasten the cure of the infection. As stated above radical surgery has as its purpose the removal of a dangerous condition to the patient's health or to some special sense. The sinus so operated cannot return to normal and the patient should be thoroughly schooled in future care of the sinus. The doctor and patient should appreciate the possibilities of the operation.

I wish to say a word about Dr. Lawwill's paper. The best results we obtain in septal surgery are on the cases that belong to the border line group. The septum is but one of the factors in the restoration of the ventilation and drainage of the nose and its sinuses. If the external wall has collapsed it will be a source of blockage unless propped up and the middle or inferior turbinates may need attention. This cannot be all done at one time. In fact a two stage operation will give a more lasting result and it is also to be remembered that a dry nose must be prevented.

DR. RICHMOND McKINNEY, Memphis: There are several points that Dr. Shea brought out with which I agree. Washing out the frontal sinus through the natural opening is certainly a difficult procedure. There is no doubt that it is a difficult procedure even with the anterior part of the middle turbinate removed. There is one thing regarding antrum surgery, drainage is easy to establish. The patient is satisfied, the pain is relieved when you remove the pus, but in most cases of sinus surgery patients still have a little discharge afterward.

In regard to frontal sinus surgery, when we have pus and pressure symptoms there is where a radical operation should be done. A point that I desire to make is that x-ray pictures in sinus pathology are not always reliable. I recently opened a frontal sinus where a positive diagnosis was made by the radiologist; the patient had also the usual clinical symptoms. I went on and did a radical operation and found a normal sinus. Do not rely too much on your x-ray pictures in sinus work.

DR. CHARLES D. BLASSINGAME, Memphis: Just one point regarding high arches, I believe high arches are largely due to lack of development of the sinuses in children. We can readily see that if a sinus does not develop properly and reach its full size with a broad arch that the child is going to have trouble later. That makes it all the

most important that sinus trouble in children should be corrected early.

Regarding acute frontal sinus infection, I had a patient recently whom I thought for several days I would have to operate on but I did not. This case was so severe that the eye closed up by the swelling. It cleared up and the swelling subsided and it is getting on well but it may have to be operated on later. I did not have to operate on it in the acute stage. I think chronic sinus infection opens up too big a field to discuss.

DR. H. S. CHRISTENBERRY, Knoxville: In regard to Dr. Lawwill's paper, I think he brought out his idea and that was removal of the nasal obstruction. He did not say that every deflected septum obstructed the nose. We know that many of them do but the purpose of doing a submucous resection is to give drainage and ventilation not for breathing only. Many people with deflected septums can breathe. Many of them get sufficient breathing through one side of the nose when the other is obstructed but for the purpose of aeration and drainage he straightens up the septum. I have seen patients with deflected septums who had all kinds of radical sinus work done. I remember one man who lost his vision. He had seven radical operations on all the sinus the surgeon could get at. Just recently I had two young ministers come to me who wanted their tonsils and adenoids out because they could not hold out in their speaking. Both of these patients had badly deflected septums. One I operated on three weeks ago. He came in the other day and said he did not tire with his speaking and could continue his work. A number of these cases do need more breathing space; they need proper drainage and breathing space which will help to relieve to a great extent the engorgement and backing up under the sinuses.

DR. WILLIAM KENNON, Nashville: Something Dr. McKinney said about his results with sinus work impressed me. Several years ago Dr. Mosher made the statement that a chronic sinus once infected is always infected. With the exception of a few outstanding cases I think that all we can do is to hope for improvement and try for a cure. We do not get cures in all cases of radical sinus surgery. We do get relief of symptoms and that is after all possibly the best we can do.

DR. LOUIS LEVY, Memphis: Regarding Dr. Lawwill's paper, one of the things we all ought to watch is our statements to our patients. In the consideration of the subject to ourselves we often take too much for granted. I think the thing we should do if it is a deflected septum is to take a mirror and show the patient what we are about to do. I was impressed with this recently. A patient came into my office complaining of difficulty in breathing. I showed the man he

could not breathe on one side. He came in later with pus and said he was in pain. We took out the mirror and showed him that the breathing space was clear but the pus was in there and would have to be operated on.

As Dr. Kennon brought out, many of these rapid cures do not come back. They drift from one to another and finally get so tired that they come to the free clinics.

A symptom in sinus cases that is worth considering in little children is the presence of coughs, which I do not think was brought out. We find in little children repeated coughs and if we watch them, we will find evidence of anthrum infection. You will often cure these coughs through treatment of the antrum.

DR. STEWART LAWWILL, Chattanooga, (closing his part of the discussion): I want to thank the gentlemen for their discussion. I just want to stress this one point, that we ought to do all we can to prevent these conditions. I still feel that we can do a great deal more in prevention than we will ever be able to do in cure. If we can get these cases early and get them into the proper hands for dental appliances, etc., we are going to do more good than we will ourselves in treatment later.

Of course everything in the matter of deflected septum operations is in a thorough operation. An incomplete operation is worse than no operation at all because it is most difficult or almost impossible to go back in later and do a secondary operation. I believe in well selected cases we will get very excellent results and very grateful patients. Personally with my own cases I am greatly enthused over this operation for the benefits I have gained.

DR. T. LYLES DAVIS, Chattanooga, (closing his part of the discussion): I have enjoyed the free discussion particularly Dr. Shea's remarks on sinus surgery. I think it is the object of every surgeon to first attempt treatment or minor surgery to relieve his patients before resorting to major surgery. I think all sinuses should be treated by the simple methods first and then if the condition continues, as a last resort I might attempt radical surgery.

As to septums, I do not think any one would operate on a septum merely for a deflection unless it causes some disturbance that interferes with the life of the patient.

The point I wanted to bring out in my paper was the chronic infections that produce no pain but yet are persistent and disagreeable. That was discussed somewhat.

As Dr. Kennon said, once an infection always an infection of the sinus, sometimes we think we clean them with a radical operation but the sinus trouble continues and it is one of the worst things we have to deal with.

TRAUMATIC SHOCK*

JOHN C. BURCH, M.D., Nashville.

SHOCK is a symptom complex exhibiting a tendency towards a falling or low blood pressure, rapid pulse, subnormal temperature, thirst, cold, clammy skin, mental restlessness, or apathy, acidosis and reduced basal metabolism. It may be present as a result of wounds of various degrees and severity and may come late or soon.

In the main the symptoms are the result of a diminished volume flow of blood, although there may have been no loss by hemorrhage. The volume flow to the tissues is dependent on the cardiac action, the vasoconstrictor tone, and the quantity of fluid in the circulatory apparatus.

Cannon has shown in late or secondary shock that the vasoconstrictor action is not inhibited, that the heart responds rapidly to an increased burden. Keith has shown that the diminished volume flow is due to a deficiency in the amount of the circulatory fluid, by injection of a known solution of vital red into shock cases, later withdrawing a sample and comparing it with the normal for the weight of that particular individual. His estimated blood volumes ranged from sixty to eighty-two (60 to 82) per cent of the normal. It is clear then that similarity of symptomatology of shocks and hemorrhage is due to a decrease in the circulatory fluid, although in shock there may have been no actual loss of blood. Cannon expresses the situation regarding the lost fluid as "out of currency," and has shown that there is an increased corpuscular concentration in the capillaries, with a consequent increased viscosity in the capillary areas. This is sustained by observation on shocked individuals who almost invariably show an abnormal red count and haemoglobin percentage, in a

sample of blood taken from the finger, which is a capillary area, and a lower although definitely accreased count and haemoglobin when taken from a vein. The difference may be as high as two million, and varies roughly with the degree of shock. The fact that blood is concentrated in shock has long been known, as an experimented fact, and Gasser, Erlanger and Meek have shown that in such a concentration there is no change in the protein content of the plasma, indicating a transudation of plasma into the capillary areas.

The fundamental fact of the decreased volume of the circulatory fluid having been established, the mechanism of the symptoms of shock is at once manifest.

Many theories for the exciting cause of the complex have been advanced, the most popular of which has been the theory of vasomotor exhaustion put forth by Mitchell, Morehouse and Keene in 1864. Another very popular theory is that of Crile regarding shock as a form of nervous exhaustion from repeated unpleasant stimuli. None of these could be regularly produced experimentally under conditions which might conceivably occur in the human.

During the late war numerous cases of the following type were observed. The most typical is the now famous case reported by the French of a lieutenant whose limb was compressed between two logs for twenty-four hours. He remained in good shape and directed his men; there was no wound. After releasing the compression he died thirty-two hours after from shock. This was the result of the circulation being again established in the damaged leg, and owing to the toxic substances formed by the crushing of tissue shock was produced. Thus the theory of traumatic toxemia is clinically proven and such theory was easily capable of being substantiated by experiments on animals. That such a traumatic

*Read before the Association of Railroad Surgeons, Section Tennessee State Medical Association, Memphis, May 11, 12, 13, 1926.

toxemia is a common cause of shock is beyond a question both from a clinical and experimental standpoint, but that it is the only cause of shock is far from the truth.

Certain nervous stimuli, a blow in the pit of the stomach, exploration of the foramen of Winslow and other equally well-known instances are every day occurrences, and cannot be attributed to traumatic toxemia. The latter type is usually a primary shock, while the former is a secondary or late shock.

Hemorrhage is usually a factor to a greater or less degree in cases of shock, and the greater the hemorrhage the less shock it will take to produce serious symptoms. Small hemorrhages of five hundred c.c. (500) or less are well borne on account of the fact that vessels contract down and the loss of blood is compensated for by contraction of the vessels, but larger withdrawals of fluid may be beyond the capacity of the vessels to compensate for its withdrawal.

Loss of body temperature is a characteristic of shock and any condition which permits this loss of temperature serves to augment the degree of shock. During the war it was noticed that shock cases responded better to treatment in summer than in winter.

This brings us to the important question of the prevention and treatment of shock which we as railway surgeons are frequently confronted with and are primarily interested in.

The prevention of shock is dependent upon the etiology as set forth, viz.: the prevention of unpleasant nervous stimuli and the absorption of toxic material from damaged tissue and the conservation of body heat.

The patient should be put to rest with morphine, wrapped in warm blankets, hemorrhage should be controlled by ligatures or local pressure. A tourniquet should not be used unless amputation will obviously be required, and then should be applied as close to the traumatized area as possible. Fluids should be forced by rectum and by mouth. All broken bones should be securely immobilized. In cases where there has

been hemorrhage, but the patient is in good condition, it should be remembered that only a small loss of blood may so reduce the quantity in the circulatory system that the vessels cannot contract sufficiently to make up the deficit, and measures should be taken to build up the quantity of fluid by transfusion of water by rectum or by mouth, before undertaking operation.

Hypodermiclysis and elevation of the foot of the bed are harmless procedures, but in my experience have been of very questionable value in shock.

The rational treatment of shock is to restore the normal flow of blood to the tissues and this is best brought about by the elimination of the cause of the condition if possible by early amputation if indicated. This is rarely possible, and the next best thing to attempt is to replace the blood out of currency by new blood. Blood transfusion is our greatest single asset in this condition and should be practiced much more frequently than at present, both as a prophylactic and curative measure. It has been my practice to use the syringe-canula method introduced by Linderman and popularized by Stetson. Its advantages are that blood is not modified by a semi-poisonous anti-coagulant, it is easy to do, requires no special training and is rapid and safe. During the past year, in a series of approximately thirty cases, I have failed to observe a single reaction worthy of the name. In those rare cases where hemorrhage takes place into a body cavity and is uncontaminated, the method of auto transfusion introduced in this country by L. E. Burch is frequently a life-saving procedure. Davis, of Nashville, in our State Journal several years ago, reported a case of haemathorax and shock treated by auto transfusion with marked success. Recently Cushing has applied it to cranial surgery with brilliant success.

The intravenous injection of fluid is followed by marked improvement, which is only temporary, but may check the process until transfusion can be done. Vaso constrictor drugs, such as adrenalin, are in the same category, but in my experience have produced noticeable temporary improve-

ment, although their theoretical action contradicts their use.

In choosing an anesthetic for shock cases nitrous oxide and oxygen is the anesthetic of choice, but could be given in such concentration that no cyanosis becomes evident. It is very satisfactorily supplemented with local infiltration of novocaine. Spinal anesthesia is contra-indicated on account of its depressing action on blood pressure. Chloroform is mentioned only to condemn it on the basis of experience of others.

The effect of ether is deceptive and frequently causes marked improvement in the circulation, later followed by pronounced circulatory depression.

In conclusion it may be said that shock is a result of a diminished volume of blood and that its rational treatment depends on the replacement of lost blood by appropriate measures.

DISCUSSION

DR. WILLIAM S. ANDERSON, Memphis: This paper is too valuable to pass by. The subject of shock is a very interesting and very important one. We as railroad surgeons have been taught for years that no surgery should be done in the state of shock. I think that is a very cardinal rule and we should abide by it always.

In regard to the treatment of shock, several factors enter into it. First, I think one of the principal standbys is a large dose of morphine to numb your patient as much as possible and cut down the stimulating effect of the brain from the injured tissues. Second, large doses of saline by the veins; subsequently, under the tissues and into the rectum. Fill that patient up as well as possible. Third, warm up your patient thoroughly by means of blankets and hot water bottles and other means that you have available. In other words, warm your patient up.

Adrenalin to my mind mixed with your salt solution is a very valuable adjunct. It keeps the heart stimulated until we can get over some of this state of shock.

Then, last, when you have opportunity to get a blood type by all means transfuse this patient. Dr. Burch uses the direct method. It has been my experience to use the titrate method, probably from habit. I also like the direct method. But when we get used to anything and it gives good service we generally stick to it. By all means if your patient does not respond, if you have succeeded in getting a good type, go ahead and transfuse this patient. Frequently you tide them over and frequently you save a life thereby that otherwise you might lose.

Dr. A. F. RICHARDS, Nashville: Just one item that Dr. Burch referred to that corroborates my experience. I don't know as I ever heard anybody mention it before. This is relative to the anaesthetic that should be used. I have discovered in my practice in the use of ether that it is deceptive.

We were taught many years ago that chloroform is dangerous. I still think it is. We were taught then to use ether mostly, and with as much latitude as we might choose. I went into the use of ether many years ago pretty freely and with very little fear. I have myself given the ether under various and sundry circumstances. I discovered a few years ago that after the stimulating effect of ether we get that weak, indefinite pulse.

I have talked to many doctors about it, but none seemed to give it ear. I would feel that maybe I am not able to decide when a pulse is weak, and that I am wrong. But when the Doctor mentioned it today in his paper it revived my experience and memory about it. I want to refer to my experience, that ether is deceptive. I have seen cases that require a great deal of stimulation and after care.

Gentlemen, ether is dangerous. We hear it said sometimes that it is not dangerous; but, gentlemen, it is dangerous.

DR. B. S. RHEA, Lebanon: I enjoyed Dr. Burch's paper very much.

I really think that blood transfusion should be the first thing in shock; that the other procedures should be taking place while getting ready for your blood transfusion.

If you are where you have not time to type the blood, you can keep a record of the donors. I know some people object to using universal donors. I had the privilege not long ago of donating some blood. I had no bad effects, and beautiful effects for the patient. I place blood transfusion first. While getting ready for transfusion, go ahead with the other measures.

DR. ROY A. DOUGLASS, Huntington: While I was in the army I had an unusual experience as anaesthetic to a British Hospital for about six weeks.

The first morning we started in I tried to find the ether. They didn't have any. We gave chloroform. For six weeks I gave from four to six anaesthetics a day, of chloroform. Sometimes the operation would last two hours, and those patients lived through it. I don't know how they did it.

One man who died had an abscess of the brain. He was moribund when we started.

Day after day we had discussions with the surgeon who did the work, about how dangerous ether was. They have the same fear of ether that we have about chloroform.

I had never given it but two or three times

before, but I gave it over there for everything that came along.

DR. G. W. MOODY, Shelbyville: I think this subject has been well covered both by the paper and by the discussion.

There is one remedy I did not hear mentioned; that is atropia. Of course rest and external heat and the transfusion all are fine, but I believe atropia is a valuable addition. I have used it so often. It will sometimes almost stimulate a "dying man." It is the finest thing in a case of shock. I just feel I could not get along without it.

DR. JOHN C. BURCH, Nashville, (closing): I am very glad Dr. Moody mentioned atropin. We all know there is pronounced sweating. Sweating is the natural reaction of the body to cool off. Nevertheless, the fact that they do sweat makes them cool down a whole lot quicker and it reduces the body temperature.

There is no question of doubt about it that atropin has a stimulating action and will prevent sweating. I am grateful to Dr. Moody for mentioning it.

There is something I did not place in the paper. The pathology in brain injury, as old Dr. Murphy mentioned it, is increased intra-cranial pressure. The treatment is dehydration.

Shock in brain injuries is a very common occurrence. What are you going to treat first, the shock or the brain injury? Recently, since the use of hypotonic solutions have come into effect, they give you the thing suitable for both, because hypotonic solutions reduce the oedema of the brain and throw it into the circulation of the tissues. So in a case of brain injury with shock, of course the first thing to do is to treat them both at the same time with the hypotonic solution.

THE JOURNAL

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J. F. GALLAGHER, M.D. -----Editor

JANUARY, 1927

EDITORIAL**AN INNOVATION**

In considering the formulation of a program for the ninety-fourth annual meeting of the State Medical Association, which will be held in Chattanooga, April 12, 13, 14, the Committee on Scientific Program felt that the programs elaborated in the past, with slight variations, conformed to a set plan and were becoming uninteresting and quite archaic. This was notably demonstrated by the program of the ninety-third annual meeting, which was held in Memphis last year. Taking this as a premises the problem presenting itself was what variations or innovations could be introduced to make the program better. The fundamental principles involved, as the committee saw it, in any program must be that the program shall be educational and interesting; furthermore, too many papers makes the program as bad if not worse than too few. Another point taken under consideration was that it does not necessarily follow that because a man is a member of the Association that he has an inherent right to read a paper and it is the function of the Committee on Scientific Program to determine who shall or who shall not be extended that privilege, or burden—in which ever light one views it.

Keeping the above points in mind, the committee first determined upon a policy of limiting the number of papers to be read and to more accurately designate the time at which they should be read. It was thought that by this means both those who were to read papers and those who were especially interested in certain papers could

more conveniently come together and that a member would not be forced to sit through the reading and discussing of a number of papers in which he was not interested so that he might be able to read or hear a paper in which he was interested.

As an innovation, not only for this program but for programs in the future, a symposium was introduced and to be followed in future programs on subjects not covered in the preceding program. In the present program Diseases of the Genito-Urinary Tract were selected. The members were invited to read papers which would be of general interest and of practicable import. It is believed that these qualifications will be fulfilled.

It will also be noted that only one invited guest from out of the state is on the general scientific program. This was done designedly, to the end that this meeting should be an essentially Tennessee meeting. It is true that the Eye, Ear, Nose and Throat Section has two invited guests and the Tennessee Association of Railway Surgeons one, but the sectional programs are in the hands of the officers of the sections.

The program is varied enough to interest all of the profession, and while this program is an innivation, we believe it an improvement and hope that it will prove successful.

WORDS OF KINDLY INTENT

In this issue of the Journal, under the heading of miscellaneous, will be found an editorial from the Chattanooga Times which was furnished by Dr. E. T. Newell, of Chattanooga. It is consoling and reassuring to have such expressions of appreciation of the medical profession, especially when they come from a layman. It is doubly significant since this article was an editorial and given the amount of space it was given, and in a newspaper such as the Times, whose editorial page is always crowded for spoce. This editorial will no doubt do much toward giving the laity a better understanding and appreciation of the regular ethical physician.

DEATHS

Dr. W. W. Foust, of Robbins, died March 7. Dr. Foust was a graduate of Lincoln Memorial University Medical Department, Knoxville, in the class of 1895.

Dr. R. H. Milam, of Lexington, died March 12. Dr. Milam was a member of the Henderson County Medical Society at the time of his death.

Dr. W. T. Allen, of Gallatin, aged 73, died December 29. Dr. Allen was a graduate of the University of Nashville, Medical Department, in the class of 1874, and was a member of the Sumner County Medical Society.

Dr. John B. S. Martin, of Cookeville, died January 1. Dr. Martin was a graduate of Vanderbilt University School of Medicine of the class of 1892.

Dr. J. H. Liebkemann, of Memphis, aged 72, died January 5. Dr. Liebkemann graduated from the Memphis Hospital Medical College in the class of 1891.

Dr. Charles E. Jackson, of Capleville, aged 82, died January 6. Dr. Jackson graduated from the University of Louisville School of Medicine in the class of 1870.

Dr. W. D. Abernathy, of Pulaski, aged 74, died January 7. Dr. Abernathy was a graduate of the University of Louisville School of Medicine in the class of 1875.

Dr. W. E. Hibbitts, of Nashville, died January 18. Dr. Hibbitts was city health officer of Nashville for nineteen years and was a graduate of the University of Tennessee College of Medicine, Memphis, in the class of 1891.

NEWS NOTES AND COMMENT

Dr. H. M. Cass has been elected president of the Appalachian Hospital at Johnson City.

Dr. R. S. Cunningham, professor of anatomy of the Vanderbilt Medical School, has been appointed chairman of the Vanderbilt Medical Society. Dr. Sidney C. Burweck, associate professor of medicine, was elected secretary.

Dr. John Overton has been elected city health officer of Nashville.

Dr. M. Smith, formerly of Ardmore, is now located at the Holy Name Hospital, Teaneck, N. J.

Committee on Arrangements, Ninety-fourth annual convention, Tennessee State Medical Association, Hotel Patten, Chattanooga, April 12, 13, 14, 1927: General chairman, J. B. Steele, M.D.; general vice-chairman, E. T. Newell, M.D.; secretary, S. F. McIntosh, M.D.; hotels, J. H. Revington, M.D.; reception, J. W. Johnson, M.D.; finances, J. C. Brooks, M.D.; publicity, L. B. West, M.D.; meeting place, J. D. L. McPheeters, M.D.; transportation, Stewart Lawwill, M.D.; golf, T. L. Davis, M.D.; commercial exhibits, H. A. Laws, M.D.; entertainment, W. J. Hillas, M.D., and H. L. Fancher, M.D.; dry clinics, S. S. Marchbanks, M.D.; ladies' entertainment, Mrs. J. W. Johnson and Mrs. E. T. Newell.

MEDICAL SOCIETIES

The McMinn County Medical Society has elected officers as follows: Dr. J. R. Nankivell, Athens, president; Dr. W. S. Moore, Etowah, vice-president; Dr. E. M. Akins, Etowah, secretary-treasurer; Dr. W. R. Arrants, Athens, censor.

The following officers were elected by the Washington County Medical Society for

1927: Dr. W. J. Matthews, Johnson City, president; Dr. C. H. Kyker, Johnson City, vice-president, and Dr. C. W. Friberg, Johnson City, secretary-treasurer.

The Bedford County Medical Society met December 16, 1926, and elected the following officers for the ensuing year: Dr. V. K. Earthman, Shelbyville, president; Dr. J. K. Freeman, Bellbuckle, vice-president; Dr. W. H. Avery, Shelbyville, secretary-treasurer.

Officers in the Bradley County Medical Society for 1927 are: Dr. J. F. Gilbert, president; Dr. W. H. Sullivan, vice-president, and Dr. E. R. Ferguson, secretary-treasurer. All reside in Cleveland.

The Gibson County Medical Society has elected Dr. B. T. Bennett, Trenton, president, and Dr. George E. Spangler, Humboldt, secretary-treasurer.

Officers of the Campbell County Medical Society for 1927 are: Dr. J. L. Hefferman, Jellico, president; Dr. S. D. Queener, Jacksboro, vice-president, and Dr. F. A. McClintock, Newcomb, re-elected secretary-treasurer.

Dr. Claude P. Fox, Jr., was elected president of the Greene County Medical Society at a recent meeting held in Greeneville. Dr. L. E. Coolidge, Greeneville, was elected vice-president and Dr. H. A. Blanton, Memphis, secretary-treasurer.

Dr. J. B. Cross, of Harriman, was elected president of the Roane County Medical Society for 1927 at the regular meeting held in Harriman. Dr. J. C. Fly, retiring president, was made secretary-treasurer.

The Obion County Medical Society met December 17 and elected the following officers for the ensuing year: Dr. J. C. Walker, Obion, president; Dr. C. B. A. Turner, Union City, vice-president; Dr. Mark Butler, Union City, secretary-treasurer, and Dr. W. F. Roberts, Troy, censor.

Loudon County has elected officers to serve their society for the ensuing year as follows: Dr. W. D. Padget, president; Dr. Halbert Robinson, vice-president; Dr. J. G. Eblen, secretary-treasurer. All reside in Lenoir City.

Officers elected to the Henry County Medical Society for 1927 are: Dr. R. J. Perry, Springville, president; Dr. J. T. Bomar, Mansfield, vice-president; Dr. J. T. Freeman, Paris, secretary.

The Carroll County Medical Society met January 11 in McKenzie and elected the following officers: Dr. S. W. Huffman, president; Dr. J. D. Todd, secretary, both of McKenzie.

The Stones River Academy of Medicine elected Dr. Mayne B. McCrary, Woodbury, president of its society; Dr. H. S. Mustard, Murfreesboro, vice-president, and Dr. J. I. Waring, Murfreesboro, secretary-treasurer.

MISCELLANEOUS

THE "DOCTOR'S BILL"

A somewhat dismal wail comes to the Times from a citizen recently recovered from what he calls a "minor operation" performed by a local surgeon at a local hospital. It is gathered from the statement made in the complaining communciation that the writer had been attacked by a "pain" he didn't quite understand; that he applied with alarm to the staff at the hospital who, after an examination, decided that an "operation," which was "simple," would be necessary to give "permanent relief." Suffering as he was, the patient agreed, of course; he was put on the table and the offending trouble was removed. It took him several days at the hospital to recover. Later his "bill" came in, and then he was seized with another sort of "pain." Perhaps if the bill had come to him before the operation, he would have thought it a small matter compared to the suffering he was undergoing—for, as a matter of fact,

the bill was very reasonable in all the circumstances. The incident recalls the old saw, "The devil sick a saint would be; but the devil well, ne'er a saint would be."

It is due to the rapidly growing hospitalization of the country and the consequent promptness with which people can get their ailments effectively and intelligently attended to that the average of human life is being annually prolonged. A small "pain," an innocent looking bruise or cut that, neglected, might lead to serious if not fatal consequences, are now rendered innoxious by the prompt treatment of the surgeon or physician, in these days so easily reached at the hospital; and because we do not die but, instead, are soon about our daily affairs with our usual health and vigor, we "cuss" the surgeon or the doctor when his bill comes in, instead of "blessing" him as we should for that he did for us so much and with the least of delay and physical pain.

The physician and the surgeon are, perhaps, the most abused people of all the professions. They are called upon at all hours; they are forced to respond to "emergency" calls from all sorts and conditions of people, have limited periods of rest—in fact, if they should yield to all the exactions made of them, they could not and would not last more than a few years at most. The bills of the reputable physician or surgeon are never exorbitant and, public experience teaches, are generally made to fit the quality of their service and the ability of the patient to pay. They have regular

charges in certain ordinary cases, but it is a rare thing that every case that comes to them is of the average kind for which they can fix inflexible fees.

But whatever the fee, it would never be too large if we were always conscious, as we should be, that without the service rendered we might be in our "cold, cold grave," or living a life of prolonged pain and chronic suffering. Experience in the investigation of the complaints as made in the letter to the Times, referred to, reveals the fact that neither the physician nor the surgeon is "arbitrary" in his insistence upon his charges, if and when he finds out that the patient is either indigent or unfortunate. It is, perhaps, true as has often said, the doctor and his brother, the surgeon, do more "thankee" work than any other class of professional men, and it is a rare thing that their charges, except, perhaps, in cases where the patient is able to pay, are commensurate with the real value of their services.

So our complaining friend might feel more complacent about his "doctor's bill" if he would simply reflect upon what might have been the consequences if he had not had prompt and expert attention at the moment such service was most needed. It would, perhaps, help to a better understanding of our debt to the physician and the surgeon if we would always remember that life and health are two things the value of which cannot be appraised in dollars and cents.

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ACUTE TRAUMATIC SPINAL INJURIES*

M. B. HENDRIX, M.D., F.A.C.S., Memphis

INJURIES to the spine are of frequent occurrence in railroad and industrial work. An early diagnosis and the application of appropriate treatment are greatly to be desired in order to reduce the tremendous cost in money and waste of time entailed in a large percentage of these cases. In truth, no other part of the body has been of greater expense, or the subject of more litigation to the railroads than the unskilled and random diagnoses of lame back, following railroad or industrial injuries.

There are two general classifications of back injuries, namely: extra-spinal and intra-spinal. Obviously the concern of the surgeon is the problem of accurate localization of the injury. Is it extra-spinal or intra-spinal? Upon the answer to this question depends the economic liability of the victim.

Dealing with extra-spinal injuries we have the right to expect that the causes, symptoms, treatment and outcome will resemble similar injuries elsewhere.

Contusions, wounds of the soft parts, sprains, lacerated ligaments, fracture of the transverse and spinal processes, are the

frequent extra spinal lesions encountered. The causes may be direct violence, but are almost invariably sudden forms of indirect violence resulting in forward or lateral bending of the spine, as from twists, falls and crushes. There are no cord symptoms in this group.

Local pain on pressure or motion is the chief symptom. The cervicodorsal, dorso-lumbar and lumbosacral regions are most commonly affected. Sprains in the lumbar region are common enough to be denoted by the term traumatic lumbago. Back pain and lameness of the back may arise from many conditions.

Focal infection plays a not unimportant role and many so-called traumatic back injuries resulting in lucrative suits, promptly yield to the cleaning up of focal infection. In women a careful gynecological examination frequently reveals a cause of lame back entirely unrelated to a previous history of traumatic injury.

Gastroptosis, nephroptosis, neurasthenia, coxalgia, hysteria, neuritis, etc., are not infrequently associated with lame back. The differential diagnosis must be made. Justice demands that the really injured patient receive appropriate attention and adequate treatment.

It is reasonable to believe that local in-

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jury as the result of trauma may so lower local tissue resistance that an existing focal infection, latent before traumatic injury, may immediately assert itself and assume the chief role in the production of chronic lame back. For this reason it is advisable in every case of so-called chronic back pain as the result of injury, to search diligently for possible focal infection, which may be a prime factor in aggravation and production of chronicity. Not infrequently the services of a competent internist is to be sought in cases of this character. In other words, one must constantly bear in mind that the complaint of back pain, following a history of trauma, may, and I venture to say, frequently is entirely unrelated to traumatic injury.

In consideration of those cases definitely due to injury, it is well to classify them into those in which rest in bed is required, and the ambulant case, requiring fixation either in the form of plaster of paris jackets or other rigid apparatus, and those in which adhesive strapping or application of linaments, lotions and the like, may seem to be beneficial. Diathermy, slow sinu-soidal current, ultra violet ray, etc., play an important part in the modern treatment and care of back injury.

The manifestations of cord lesions are irritative or destructive, depending upon the site and extent of the injury, and they become manifest as related to the vertical or horizontal planes of the cord. Vertical lesions of a motor type vary between paralysis and irritative evidences, as denoted by spasms or rigidity. It is to be recalled that a segment supplies many muscles, and therefore paralysis or involvement of a single rather than a group of muscles, is evidence that the lesion is peripheral or distal and not spinal or central. Lesions of the sensory type vary from complete anesthesia to alterations in sensation. The summit of the anesthesia is ordinarily the best guide as to the level of the lesion. Reflexes are wholly abolished in complete lesions, at and below the level of the damage. The upper level of the abolition of reflexes usually coincides with the anesthesia and the determination of both gives

adequate information as to the level of damage done.

Visceral changes relate chiefly to the bowels and bladder. If the centers in the lumbar segment are impaired there is complete incontinence of feces and urine; if the lesion above these centers, then voluntary control alone is lost and automatic action allows their function to be unconsciously performed. If this last condition exists, the sphincter can still contract, but it cannot do so when the center is involved. Retention of urine and feces may occur, and in the case of the bladder may lead to inflammatory changes that may extend to the kidneys, thus producing a serious secondary syndrome.

That type of injury classified as intra-spinal, is of most concern to the surgeon and patient alike. It is generally accepted that the early clinical examination of the patient with a severe cord lesion is often inadequate to fix the extent of the injury. In cases of suspected severe cord injury, an immediate neurological examination, x-ray examination, institution of treatment for shock and finally a review of neurological findings should be completed within the course of a few hours. Whether the lesion is incurable, one demanding immediate operation, or whether it is a partial lesion being converted into a complete one by pressure, are problems that demand as prompt a decision as possible. In other words, a definite course of procedure should be decided upon within the first twelve or twenty-four hours. Allen has shown by animal experimentation that operation on cord pressure cases is of much less value after the lapse of this period.

The most common intra-spinal injuries encountered in railroad surgery are (1) the compression fracture with but slight or no cord involvement; (2) fracture dislocation. The compression fracture is usually due to sudden application of force on the anterior or lateral portion of the vertebrae body from forced flexion, or the application of force at either end of the spine, causing it to buckle. In some instances force is applied to both ends of the spine simultaneously, as for example when an individual

is caught between two railroad cars. Fracture dislocation is the frequent injury of grave concern, because it is always associated with severe cord injury.

Extradural or intramedullary collections of blood and oedema with swelling of the cord also result in local compression, manifesting cord symptoms.

A large number of spinal cord lesions are hopeless because of immediate destruction of the cord at the time of the injury. A few of these cases should be promptly recognized because of the vertebral deformity and clinical findings.

The establishment of the existence of pressure is the essential feature in the analysis of spinal injury cases. Whatever the cause of the pressure, the result is partial obstruction or a complete occlusion of the spinal subarachnoid space at the site of the injury. Obstruction of the spinal subarachnoid space following trauma may be regarded as satisfactory evidence of pressure on the cord. The uncertainty that often arises as to the local conditions about the injured segments of the cord has led to operations which have shown the cord to be perfectly unharmed.

Some writers have stated that the only cases suitable for operation are those in which the symptoms point to a partial lesion and that operation should only be performed after a sufficient interval of time has elapsed to prove that it is a partial lesion. If this be true, then we must abandon as hopeless a certain number of cases in which operation would be of benefit.

The essential indication for operation in spinal cord trauma is the existence of pressure on the cord as determined by a block of the subarachnoid space. The confusion resulting from an attempt to settle the operative indications on the basis of a complete or incomplete physiological interruption has been greatly clarified by the recent introduction of lipiodol in lumbar puncture after the method of Sicard. Its use is attended with no untoward symptoms, and in the hands of many it has proven of value in the diagnosis of subarachnoid block.

In the surgery of traumatic back injury with cord involvement, the operation that presents itself as a possibility is laminectomy. The procedures indicated in a given case therefore are removal of clots, indriven fragments of bone, reduction of deformity, longitudinal section of the cord for oedema, etc.

A classification based on methods of treatment of the pathological lesions following spinal trauma may be briefly enumerated as follows:

1. Those demanding aminectomy (a) crush of the cord without loss of continuity; (b) intradural hemorrhage; (c) severe oedema; (d) extra dural hemorrhage; (f) deformity of spinal canal causing angulation and compression.

2. Those requiring fixation only. (a), Free fracture with slight cord involvement; (b) fracture with increasing hyphos and slight cord involvement.

3. Those in which no operation is indicated. (a) Complete severance of the cord; (b) hematomyelia; (c) slight odema extravasation of blood.

The second group is easily disposed of by adequate fixation by plaster of paris jackets and recumbency. The other two groups require more consideration as the differentiation of the lesion is frequently difficult. Modern methods of investigation, however, have enabled the surgeon of today to achieve results hitherto unobtainable.

The prime object of surgical diagnosis in traumatic back injury is the determination of the degree and character of cord injury and the extent of bone injury and displacement.

Without cord injury or bony involvement the acute and chronic lame back are presented for treatment. Cord injury definitely established the question arises, is it operable, is the lesion transient, one in which spontaneous recovery may be expected through fixation alone, or is the extent of the injury of such degree that death is inevitable or the victim a hopeless cripple. Operability once determined, laminectomy which offers hope of ultimate recovery. tion whcih offers hope of ultimate recovery.

The acutely sore traumatic spine, the chronic lame back and the severely injured vertical column and cord are frequent problems in industrial and railroad surgery. Presented as a problem of differential diagnosis and applied surgery, the acutely injured spine will ever tax the diagnostic acumen and surgical ability of the general surgeon and orthopedist alike.

DISCUSSION

DR. DUNCAN EVE, SR., Nashville: The paper very satisfactorily goes into the detail of most usual conditions that occur with that injury. They, as we all know, are the most deceptive symptoms that we have. It requires quite an investigation. Frequently it cannot be determined at one sitting; or perhaps half a dozen, as far as that is concerned. It is a matter of very great concern in our minds frequently, whether this patient has a true injury, or whether it is a deception he is proposing to make money.

Of course, when we have a distinct cord injury, such as from crushing, or fracture, or dislocation, why the symptoms then are usually so very prominent there is little or no deception. But we refer to those cases in which the division of the cord is not known. The borderline cases. Frequently an x-ray won't determine it.

It may be that the compression is entirely due to hemorrhage, in which instance, of course, time may clear it up. In other instances we may have a slight spicule of bone that is pressing, and the x-ray does not determine this, especially if there is blood in the spinal canal, may be a clot, surrounding this condition. Then we have the defective conditions we referred to.

I am speaking generally now without going into detail as to any special condition of the spine. In any spinal injury at all, I think that we should go slow and take time to render an opinion. We frequently can't do this without several examinations. We can't do this except by progression of the case and some distinctive condition that is manifest. They are sometimes late in manifesting themselves. It requires sometimes our best diagnostician to determine the real condition the patients may have. They may be most defective. There may be legal problems, malpractice, or, as the case may be, a true injury; and we scratch our heads and have to wait.

The element of time is perhaps the only thing on which we can judge the fairness of the facts as they may stand, and even then we have known many cases in which the doctors differ. And when that occurs of course it is a problem that only time itself will elucidate. I want to state that my own experience perhaps of many years ought to give us an opportunity to form an opinion. But I am more troubled, much more

troubled about back injuries than I am about any other kind. I felt like shaking my head, meaning "I don't know." And, to be honest, I don't know. And, in fact, sometimes I have never known.

I am perfectly willing to state that to a medical organization, though perhaps I would not state that in a court of injury. You there have to make a very positive assertion or it doesn't mean anything. Of course in that instance if there are no medical men for the other side of the case in which you are perhaps testifying, you are not caught up with so quickly as you would be where the conditions are more or less prominent and well known.

Many of them are not well known. In many of them for that reason you are never going to find out the true pathology.

I will also state that those who have had the most experience are puzzled frequently and have to shake their heads. They are the most intricate and absolutely unraveled problems that we come in contact with.

DR. J. T. MOORE, Allgood: I think that the point Dr. Eve made that this is one of the greatest enigmas that confronts a surgeon in regard to spinal surgery is a fact.

I had a very strong illustration of a case of that kind. A few years ago there was a head-on collision with a passenger train. The train came pretty near coming to a stop, but it had rather a severe concussion with a freight train. There was a man on that train that had quite a jar. It shook him up considerably.

The next day I say him he was walking along pretty good. About the third day he sent for me. I never heard a man taking on with his back so bad. He was rather a fleshy man and I could not find anything wrong with his back by examination, physically, where he was apparently suffering intense pain. And I had no way of knowing that he was not suffering intense pain. He went on and seemed to get worse. An x-ray of his back was negative. He sued the Railroad Company and came to Nashville and was examined by a specialist, an honest, good man, who knows as much, I think, about this kind of surgery as anybody.

He pronounced it a sacro-iliac strain. He applied adhesive plaster as tight as he could across the back, and wrote me a letter telling me to apply these adhesive plasters to his back, to put a new plaster on every three or four days, because they would get loose. It had been a week or more. You know how it gets loose.

I stripped it all off. Every time I would take these adhesive plasters off this man would nearly die until I could get them back on. That aroused my suspicion, and this time especially, when he was suffering intensely, I had to hurry and get these plasters back on. I didn't want to do the man any injustice. I didn't want to do the Rail-

road Company any injustice. The best of us can be deceived in these back injuries. And it is mighty hard to do justice to the Railroad Company and justice to our patients. This man was a good friend of mine. I would not have done him an injustice. I would not have done the Railroad Company any injustice. I thought I would like to know, but I couldn't know.

On the witness stand this specialist said that this man was seriously injured. He finally got \$7,500 out of the Railroad Company.

That is where the great difficulty comes in discovering the back injury. I believe that the x-ray ought to show. If you can't find any physical signs of pathology there and the x-ray does not show it, we might come to a pretty good conclusion there is no serious injury. My first diagnosis was a strained muscle.

THE CHAIRMAN: Did he get well after the suit was settled?

DR. MOORE: Yes.

DR. DUNCAN EVE, SR., Nashville: I have recalled since I sat down a most interesting case that I would mention because of its very unusual settlement or findings.

I went up to Bowling Green, Kentucky, to testify for the L. & N. Railroad in a back injury case in which the party who claimed to have been injured was crawling around the floor like a caterpillar. He was the most deceptive individual I ever saw. I knew he was a fraud, and that his methods were deceptive, and yet that is mighty hard to make a jury believe, particularly as he was very much emaciated, and all that.

After I had given my testimony in the case I was so much interested that as the case was to be argued the next day I remained over. I was fortunate in doing that because I saw the end of it in a manner that I would never dream would occur, and to the relief of the L. & N. Railroad.

The night that I gave this testimony, remaining over as I did, the house that he was in caught fire, and he beat a race horse out of it.

"And deponent further saith not."

DR. WILLIAM S. ANDERSON, Memphis: This thoroughly emphasizes to my mind what often happens in these cases. We have a person who is probably shaken up slightly. The injury does not amount to anything but they begin to imagine that it does. It begins to prey on the mind, and they become rather neurotic along the subject, whereas the primary lesion has long since been cured.

In these conditions the sooner the Claim Department can get to them and slap a good green-back poultice across that back the sooner will they get well.

There are two points in the paper I want to mention, that we should not overlook in our examination. When a case comes to you complaining of injury to the back I think you should give it the most thorough and careful examination, because they always lead up to something. That is,

especially look for some focus of infection. Rule out all focal infections, if possible. Especially in women rule out all focal infections because this low grade pain in the back may be due to some infection around Skene's duct, some old leukorrheal discharge or some old trouble in the pus tubes.

DR. H. B. EVERETT, Memphis: There are one or two little points that I was thinking about during the discussion.

Some years ago I saw two men who were supposed to have been in a railroad collision and they were thrown over some seats, both of them being very large men, weighing around 230 or 240 pounds. I did not see these men until the next day. It happened to be on a railroad with which I have no connection, and the families had called me to see these men.

We had them x-rayed. We never were able to make a satisfactory diagnosis. The unfortunate thing for the railroad company was that they sent these men to the hospital and put both of them in the same room. And in less than 48 hours they were both exactly alike. You couldn't get either one of those men out of the bed. They wouldn't move for anything. They stayed there for a week or ten days just that way. In the meantime the claim department had been on the job pretty regularly, and finally effected a settlement. These men within a week,—they didn't right away the next day or two,—but in a week or ten days both men were out doing light work; while previous to that time, while they were together in the hospital, they both had the same train of symptoms. The only thing we had was a negative x-ray report, and still they complained of pain which there was hardly any way to dispute except merely to tell them they were lying, and that was all. We all believed they were.

After the settlement the men went to work within a week or ten days. I believe if those men had been kept separate, if they had been put in separate rooms when they entered the hospital that we would have gotten rid of those cases much quicker than we did.

At first one of them did not appear to be as severely injured as the other. In two or three days they were just alike, and you couldn't get anywhere with the settlement.

DR. HENDRIX (closing): I appreciate very much the discussion of my paper. During the past six or eight months I have had quite a little experience with compression fractures. The orthopedic men tell us that this type of fracture is one of the most troublesome, that the patient will have pain in the back for a long time, an aching similar to that resulting from a corn on the toe.

If a man receives a back injury in a railroad wreck and the x-ray shows a variation in the size of the vertebrae, it is almost invariably called a compression fracture even though the symptoms do not justify such a diagnosis. The tendency on the part of the Roentgenologist as well as the rest of us, is to regard any and all variations in the size of the vertebrae following an injury, as a compression fracture. Not infrequently several days observation of the patient will fail to verify such a diagnosis, therefore, it is only a matter of justice to the railroads that we do not handle this type of injury with undue haste.

SPONTANEOUS RUPTURE OF THE HEART*

OTIS S. WARR, M.D., F.A.C.P., Memphis

GF. M., age 55 years, barber, entered the Baptist Memorial Hospital November 9, 1925, complaining of precordial pain and shortness of breath.

Family History. Negative.

Past History. Had typhoid fever at thirty and influenza seven years ago. Had had several attacks upper abdominal colic of the gall-bladder type, usually requiring a hypodermic for relief; last attack was fifteen years ago. He smokes twenty cigarettes a day and drinks considerable coffee. He was told three years ago that he had high blood pressure.

Present Illness. On Sunday, October 25, 1925, complained all day of indigestion and gaseous distention, which he attributed to over-eating the night before. Took several glasses of soda water during the day and felt fairly well when he retired. He woke at 4 a.m. with a substernal pain which grew progressively worse. He was seen two hours later by Dr. R. C. Elmore, who stated that he found him "in agonizing pain, pale and apprehensive." A diagnosis of angina pectoris was made and he was given nitroglycerin by mouth, morphine hypodermically and inhalations of amyl nitrite. This was followed in fifteen minutes by another hypodermic of pantopon gr. one-third before he was relieved. His blood pressure then was 170/120. Urine and blood examinations, including a blood Wassermann, were all negative. About forty-eight hours later he had a second attack, followed in eighteen hours by a third, each requiring a hypodermic of pantopon for relief. Amyl nitrate gave some relief, but he preferred not to use it because of the very severe headache which it caused. The next attack occurred on November 9 while on train coming to the hospital, and was partially relieved by amyl

nitrite. He was still having some pain when first seen by us about 10 a.m. on this date.

Physical Examination. Patient is a rather obese man, weighing about 210 pounds. He has an ashen gray color, his facial expression indicates apprehension, and he is noticeably dyspneic even while lying in bed. Eyes are normal. Only few teeth remain and the gums show severe pyorrhea. The tonsils and tonsil pillars are reddened. *Heart.* Apex neither visible nor palpable. Cardiac dullness extends one inch to left of mid-clavicular line. No thrills felt. The heart sounds are of fairly good quality, regular; no murmurs heard but the aortic second sound is somewhat accentuated. *Lungs* show a few rales at both bases, otherwise negative. *Abdomen* is moderately tender in epigastric region and over right upper quadrant. The liver and spleen are not palpable. There is no adenopathy. Extremities are negative and reflexes normal. Blood pressure 165/110, pulse 96, temperature 98.2-5. The *urine* showed a trace of albumen and a few hyaline casts. Total W. B. C. 12,000 and polys 82 per cent. Total N. P. N. 29.3 mgms. per 100 cc. of blood. Fluoroscopic examination showed a moderate hypertrophy of the heart and a slight dilatation of aorta. Orthodiagraphic measurements were not made.

Clinical Course. He was fairly comfortable for the first twenty-four hours in the hospital, but during the second night he had what he described as the most severe attack of all, and in spite of several doses of morphine and nitroglycerin was still very uncomfortable when seen at 9 o'clock next morning. His color was a dusky pallor and his expression showed much suffering. Examination of heart revealed a definite pericardial friction rub in the fourth left interspace. The heart was reg-

*Read before the Tennessee State Medical Association, Memphis, May 11, 12, 13, 1926.

ular and sounds of fair quality. The blood pressure was 160/110, though not all the beats came through above 150. The temperature which had been subnormal since admission was now 100 2-5 F., pulse 86. The blood count showed total leucocytes 9,200 and neutrophils 80 per cent. A diagnosis was made of a coronary thrombosis with an infarct of the heart and a secondary pericarditis. Three hours later the pericardial friction sound had greatly increased and could be heard over all parts of the chest. There was considerable tenderness to pressure over the precordia and in epigastrium. As the friction rub increased the pain became more severe and it was necessary to keep him constantly under the influence of pantopon. Temperature now was 101 2-5, pulse 120, blood pressure 145/105. The remainder of the day he was kept constantly under the influence of opiates. At 9:30 p.m. he was resting quietly and appeared to be free from pain, though he still showed the dusky pallor, pulse was weak and there was only an occasional dropped beat. He was sweating freely, temperature 99 3-5 and pulse 120. The pericardial friction sound had entirely disappeared. Blood pressure was not taken.

He rested well that night and next morning (November 12) said he felt better than for several days. Said he was hungry and seemed to enjoy his breakfast. About fifteen minutes after he had finished eating he was suddenly seized with an agonizing precordial and substernal pain, became ghastly pale, broke out in a profuse cold sweat and pulse became imperceptible. He was seen at once by the house physician, who thought he was dying. He was given two-thirds grain pantopon and thirty minutes later had rallied somewhat. Examination showed the heart sounds almost inaudible. Only an occasional radial pulse beat could be felt. On attempting to estimate the blood pressure a few beats could be heard between 60 and 70 only. The temperature was 96. A diagnosis was made of rupture of the heart with a small leak. The remainder of the day he was kept constantly under the influence of pantopon. About

twelve hours later he aroused and complained of being nauseated. Before another hypodermic could be given he vomited and suddenly expired.

The final clinical diagnosis was: (1) Angina pectoris; (2) coronary sclerosis and thrombosis; (3) infarct of the heart; (4) acute fibrinous pericarditis; (5) rupture of heart; (6) benign hypertension; (7) chronic cholecystitis.

AUTOPSY FINDINGS

The significant findings were as follows: The pericardial sac was greatly distended with clotted blood. The greater part of the epicardium was covered with a fibrinous exudate of recent formation. Near the apex of the left ventricle, which was hypertrophied, there was a ragged opening about one cm. in diameter communicating with the ventricular cavity. This opening was plugged with a blood clot. The endocardium was apparently normal and the valves intact. The coronary vessels were markedly atheromatous and the lower end of the descending branch of the left was occluded with a recent thrombus. The ascending and transverse portion of the aorta showed considerable atheromatous changes. The only other findings of importance were the small contracted granular kidneys and a contracted gall-bladder which contained one large cholesterol stone.

This case is reported in detail for the reason that it illustrates so splendidly all the various symptoms that might be expected in a case of coronary thrombosis and rupture of heart. The duration was sufficient to allow careful clinical observations to be made of the different stages of the disease.

To begin with we have a man somewhat past middle life and considerably overweight who was known to have had a high blood pressure for at least three years. There had been no symptoms indicating renal insufficiency, therefore most likely he belonged to the group of so-called benign hypertension or sclerosis. In addition to the chronic oral infection and infected tonsils, he gave a history suggesting gall-bladder disease of several years' duration. His

excessive weight added some color to this diagnosis. Furthermore, we not infrequently encounter cases of myocardial degeneration associated with gall-bladder disease—sometimes referred to as the Clifford Alburt heart.

During the weeks before he came to the hospital he had had several rather typical attacks of angina pectoris. Finally he had an attack that persisted and was not relieved by nitroglycerin and amyl nitrite, but required large amounts of morphine to control. This fact alone suggested that there was something more than a simple angina pectoris. Then there developed the pericarditis followed by a rise of temperature. While this left no further doubt as to the coronary thrombosis with a resulting infarct of the heart, we were somewhat surprised at the sustained blood pressure. The pericarditis and fever indicated a reaction to the necrotic heart muscle. Finally with a weak point in the heart wall and a blood pressure still somewhat elevated a "blow out" was the one thing most to be expected.

DISCUSSION

DR. E. R. ZEMP, Knoxville: That good old patriarch, Dr. Sheddan, stated yesterday that statistics were about "four-plus" lies. And certainly when it comes to making a diagnosis of sudden death he is about correct, because at its best it is but a guess, unless we can have post mortems. Great many of us cannot get a post mortem under any circumstances and hence our diagnosis is partly a guess.

Undoubtedly many cases of sudden death were perhaps diagnosed as apoplexy, acute indigestion, angina pectoris and a host of other things, when death was really due to a rupture of the heart. But I see no other way for the general practitioner who is not blessed with the opportunities to review his cases after their fatal termination.

I know of no clinical symptoms that would distinctly indicate a cardiac rupture unless it is sudden death. I do not think it is as rare as we are led to believe by the literature that I have seen. We know that it is fatal, that it is hopeless.

We have, to a certain extent, mastered traumatic rupture of the heart, especially when it occurs from clean stab wounds, or something of that kind. There have been many cases operated on, and quite a few recoveries. But in spontaneous rupture of the heart the process has been going on for years. And so it is in the prophylaxis of it only that we can do any good. And this

means a general management of the diseases of middle life, and perhaps beginning even farther back than that.

Certainly we can prevent a great many of them by teaching our patients who have passed 40 and approaching the fatal age of this disease of 60, or over, how to live, how to eat, how to play, how to rest and how to work.

Outside of the one hopeful point that I got in the Doctor's paper it all looks very hopeless to me from a therapeutic standpoint, and that one hopeful sentence was that "the patient expired before the house physician got there." I wonder what would have happened after he got there.

DR. J. A. McINTOSH, Memphis: I was present at the autopsy and assisted. I bear witness to the accuracy of the reported clinical findings before the autopsy findings were known.

The case exemplifies beautifully the effect of dead cells surrounded by the living. The nutrition being cut off by thrombosis of the coronary vessels, the cells die and around them an acute inflammatory exudate appeared detected clinically by the friction rub.

There were no bacteria present, yet an acute pericarditis existed. I don't think embolism occurred, because the heart valves were intact. As far as we could ascertain anatomically there was no possible source of emboli between the coronary vessel and the lungs. It was, anatomically, a broken heart.

DR. W. K. SHEDDAN, Columbia: This paper is certainly an important subject and the paper is exceedingly important.

We realize, those of us who are watching our mortality rates, the frequency of cardiac disease. Some four or five years ago in my own work I began keeping a history of the frequency of cardiac lesions. Some thirty odd years ago I kept mortality records of all deaths occurring in my work for a period of about three or four years. At that time a large per cent of my mortalities were due to tubercular lesions. Frequently in watching for these lesions my attention was attracted to the fact that we were having a great many deaths from cardiac disease, more at present than from tubercular lesions, which formerly was a large per cent of my mortality.

With the average run of practitioners in medicine, if you haven't a murmur you don't suspect cardiac lesions. Valvular lesions are not any more frequent than myocardial lesions. Myocardial lesions are much more frequent than they were ten or fifteen years ago. Any man observing the results of his own work will realize that fact.

Soon after I began to see this in my own work I began to study the mortality lists of deaths as printed in the American Medical Association Journal of Doctors in the country. I kept up with it. About thirty per cent of the physicians themselves died from cardiac lesions and a larger per

cent of them myocardial lesions. So many of these deaths occur in people between forty-five and sixty-five.

Now, formerly, Mr. President and gentlemen, we thought these myocardial diseases were acquired with senility. Now, we see them occurring in people not senile in years.

I don't know whether we are recognizing these conditions more frequently, or whether they are coming more frequently.

This next attracted my attention. Some time last year the statistics coming out from the registration area of the United States showed that cardiac diseases was leading the list of mortality in the area in which accurate record was kept. Now, cardiac disease is certainly becoming something we have to consider. Here is another feature about cardiac disease brought out in the paper. I believe I could safely say that nine out of ten come in complaining of some gastric disturbance. "Doctor, my stomach is giving out. I have been having stomach trouble." You hear it so often. Frequently you pass the thing over lightly, as if were simply a digestive disturbance. If you investigate you will find you have a more serious thing to deal with. I was first attracted to this by a report of a long list of cases in which it was first referred to the gastro-intestinal tract. I began more carefully to look into these conditions.

Another thing is the frequency of these things. I think the doctors themselves must be overlooking it. Take the list in the Journal of the American Medical Association and see how many doctors are dying between forty-five and sixty years old. Frequently it is specifically stated that there are myocardial degenerations. You have to look for something else besides murmurs. They are practically an insignificant part of the cardiac symptomatology. You have no murmurs in many of these conditions.

In the case of Dr. Warr, he was fortunate in making his diagnosis of rupture. I would have realized that I had a marked myocardial disease.

You take cases of angina pectoris. They have been divided into primary and secondary angina. The secondary cases of angina are often of not great significance. They are toxic in their nature and not due to any structural change.

DR. HILTON R. CARR, Memphis: Dr. Warr was certainly very fortunate in being able to make a correct ante mortem diagnosis, and is to be complimented for the accuracy with which he observed and reported his findings.

When we consider the vast amount of work performed by the heart—beating on an average of seventy times per minute, or over one hundred thousand times in the twenty-four hour period, it is, indeed, remarkable that cardiac rupture does not occur more frequently. I have believed for some time that it is a more frequent cause of sudden death than we realize. Cardiac rupture

is no doubt responsible for some of the sudden and mysterious deaths reported in the newspapers in individuals past fifty years of age.

Coronary sclerosis with thrombosis, and resulting infraction and softening of the myocardium, is given as the most frequent cause of rupture.

Personally, I am inclined to think that coronary disease, producing as it does ischemia and undernutrition of the cardiac musculature, extending usually over a long period of time, is the principal causative factor in the production of the myocardial degenerative changes.

Some are inclined to stress the importance of intermittent claudication as playing an important role in bringing about myocardial starvation and fatigue.

There must of necessity be marked myocardial degenerative changes with softening or the heart could not rupture spontaneously.

At one time it was thought that physical strain was capable of producing rupture, but this theory is no longer regarded as tenable, for the reason that many of the cases are reported as having occurred during sleep.

DR. HARRY C. SCHMEISSER, Memphis: This case is indeed very interesting, especially if you can start at the known facts of the autopsy and then review the clinical findings. It is a fascinating thing to do as we pathological anatomists in touch with the clinical developments, can tell.

Now, this case exemplifies very beautifully the typical infraction of the heart's muscle just as it is described in the literature. That is, that there is an arterio-sclerosis of the branch of the coronary artery resulting in loosening or breaking is the endothelial lining of the artery which is necessary for an antemortem clot to localize. The antemortem clot then localized, a structure we call a thrombus.

It comes about quickly and cuts off at once and permanently the blood supply to that artery which the particular branch of the coronary artery would supply. As a result, the heart muscle fiber dies at once. And in dying we have the lesion known as a cardiac infarct.

Now, that is just what happened in this case. Cardiac infarcts are not so rare. We see them quite frequently at autopsies. But they usually undergo fibrous tissue replacement. At the most, you may have an aneurysm. It stands and does not rupture.

The second outcome is, as in this case, instead of being replaced by fibrous tissue there must have been a high blood pressure, maybe not recorded,—I do not recall that point,—but there was something there at this time to cause a sudden rupture of this dead area. So that in this case we did have a rupture as the outcome.

Now, it is very interesting to predict from the autopsy findings what the clinical signs and symptoms should have been. We enjoy doing that, and often find when consulting with Dr. Warr, as we

did, that he actually had recorded before death these very findings.

I state that this case clinically and anatomically is what we call a typical text-book picture, and they are unusual. It would be very well to save this for publication some time in a text-book. It is beautifully worked up clinically, and anatomically.

DR. OTIS S. WARR, Memphis, (closing): I think Dr. Shedd's remarks on the incidence of heart disease are very timely. I wonder if we quite realize that, as he stated, organic cardiac disease, heads the list of all causes of death throughout the registration area in the United States.

Fifty years ago tuberculosis was easily, to paraphrase the late Dr. Osler, the "Captain of the Men of Death." In this length of time the mortality from tuberculosis has been cut literally in half. Pneumonia, at one time among the leading causes, has been materially reduced. Two diseases have been steadily on the increase, cancer and organic heart disease.

Now, there are reasons for this which we must not lose sight of. First of all, the average length of life in the United States now is more than double what it was fifty years ago. As we increase the span of life, more and more of us will reach that period when organic heart disease is necessarily to be expected. And that death should result is not a surprise when you look at it that way.

That has been the explanation for the apparent

increase in frequency of diabetes which is also coming to be an important cause of death. But that has nothing to do with the subject of rupture of the heart.

I think as we go out in our contact with the public we must not lose the opportunity to emphasize to the public that organic heart disease is on the increase.

Recently Dublin, who is one of the outstanding statisticians of this country, made this very astounding statement. He says of all people living in the United States now ten years of age and older one out of five will die of heart disease. Now, that is a big thing to think about. One out of five after ten years of age, not after we reach middle life.

As has been pointed out in the discussion, this case exemplifies beautifully the stages that lead up to the condition which was the immediate cause of the rupture of the heart.

Now, one thing that we might well keep in mind is that epigastric pain is not always due to sub-diaphragmatic pathology. Very frequently epigastric pain is due to disease above the diaphragm. Among these, disease of the heart should be thought of first. If we could educate the public out of the habitual notion that "acute indigestion" is the thing to be feared as a cause of death and that what they look upon as acute indigestion and what is reported often times as the cause of death, is after all, some acute condition of the heart. Most often it is angina pectoris or something of this kind.

I thank you very much for the discussion.

COMPLETE BILATERAL DUPLICATION OF URETERS AND RENAL PELVES*

C. F. ANDERSON, M.D., F.A.C.S., Nashville

THE literature on duplication of the ureters and renal pelves has been thoroughly covered within recent years.

Mertz in 1920 reviewed 300 cases, fifty-one of which showed a complete bilateral duplication. Harpster, Brown and Delcher in 1922 covered 382 cases of multiple ureters, forty were of the complete bilateral type, twenty-eight incomplete, ten complete unilateral duplications with supernumerary kidney, 171 complete unilateral duplications with fused kidney, nine in-

occurring in three to five per cent of patients who have had complete urological examination according to Thomas.

He reported a complete duplication of the left ureter and renal pelvis with some anomaly of the right pelvis.

Incomplete duplication occurs frequently. Complete bilateral duplication of the ureters and renal pelves is rare. Mertz gives the frequency as twenty-seven per cent of all anomalous conditions met with in the upper urinary tract. Brasch found six per cent and Harpster ten per cent. Walther in reporting his case December, 1925, stated



Fig. 1

This shows a complete duplication of the ureters on each side.

complete unilateral duplication with supernumerary kidney and 124 incomplete unilateral duplications.

Braach and Schroll in 1922 reviewed the literature and added nine cases of complete bilateral duplication of ureters and renal pelves.

Duplication or partial duplication of the renal pelvis is fairly frequently met with,



Fig. 2

Pyelogram of the upper pelvis of left kidney.

that it brought the total number up to fifty-one.

I regret very much that I am unable at the present time to accurately bring the total up to date, however, I am sure that other cases have been reported and have no doubt but that the literature now contains some sixty to seventy cases to which I wish to add my case at the present time.

*Read before the Tennessee State Medical Association, Memphis, May 14-15-16, 1926.

Miss M. M., age 21, stenographer, was first brought to me by a gentleman friend who had an

ulcer on the glans penis,—which proved to be a chancre,—to see if he had contracted his disease from her.

At this time her syphilis was so evident, and she had no other complaint. I must admit that no history except that of her syphilis was taken. She had a maculo-papular eruption, general adenopathy, sore throat with mucous papules in her mouth. The remains of a chancre on the cervix and a 4 plus Wassermann.

She was immediately put on intensive anti syphilitic treatment. February 23, 1926, she complained of frequency, urgency and painful urination. At this time a more complete history was taken.

Family History: Unimportant.

Past History: Has had the usual diseases of childhood. About three years ago she had some bladder trouble with frequency and painful urination which lasted about six weeks and was re-

Cystoscopy: Local anesthesia, bladder capacity normal, no stones, tumors or diverticulae seen. Mucous membrane inflamed over the area of the trigone. It was at once seen that there were two urethral openings on one side situated in the normal position one above the other and about one-half centimeter apart. On looking at the other side I found the same condition. The openings were apparently about the same size, the lower ones on each side possibly the larger.

X-ray catheters No. 5 were passed into both orifices, and on to the kidney pelvis on the right side without difficulty. The cystoscope was then removed, reloaded, reintroduced, and the two ureters on the left side catheterized. Specimen of urine and cultures were taken through the four catheters. Phthalein given intravenously and both time and quantitative tests made. The time of appearance from the lower right and lower left was four minutes and returned fifteen per cent in fif-



Fig. 3

Pyelogram of the lower pelvis of left kidney.

lieved by some medicine from the family doctor. She had a recurrence of this same trouble about two years ago, since which time she says she has had more or less trouble all the time, with exacerbation and remissions.

Was operated on for appendicitis and a tumor of the right ovary removed in the latter part of 1924 the exact pathology of which she did not know and was not obtainable otherwise.

Physical Examination: A young woman well nourished (inclined to be stout).

Head and Neck: Negative.

Thorax: Normal.

Heart: Normal in size, sounds normal and free from murmurs.

Abdomen: Fat, liver and kidney not palpable, no masses felt, no soreness or rigidity. A scar in right side from her former operation. Inguinal glands palpable, reflexes normal.

Vaginal Examination: Negative, smears from urethra and cervix taken which were negative for gonococci. No masses or tenderness could be made out in the pelvis.

Urinalysis: Catheterized specimen showed much pus, few red cells and bacteria.



Fig. 4

Pyelogram of both upper and lower pelvises of left kidney.

teen minutes. The time of appearance from the upper right and upper left was five minutes and returned two per cent in fifteen minutes. The urine from the two lower segments were about three times as much as from the two upper. The urine received through three of the catheters was clear, that from the right lower was slightly cloudy, no traumatism was done by any of the Catheters, producing blood, which is so frequently the case.

Radiograms were then made, first a plain plate with all four catheters in position, then pyelograms of the right side were made. The lower right was first injected with a fifteen per cent sodium iodide solution which produced pain with six c. c. A radiogram was then made. The upper right was injected and definite pain produced with three c. c. of solution, and another radiogram made. We did not at this time make pyelograms of the left side, as the patient was pretty well worn out, and besides it is not my custom to pyelograph both sides at one sitting. The urines from the left side were negative both microscopically and culturally. The urine from the upper right was negative both microscopically and culturally. That from the lower right contained 200 pus cells to

the field and grew a culture of B-coli after twenty-four hours.

March 3, four days later, this patient was recystoscoped and pyelograms of the left side made. The right lower segment was lavaged with a one per cent nitrate of silver solution. Specimen and cultures were taken at this time to re-check the former work, with exactly the same findings.

March 9, cystoscopy with lavage of right lower segment.

March 16, culture taken from right lower segment and was lavaged as before. This culture was negative. This patient is under close observation. Her bladder symptoms having been relieved temporarily. The bladder urine has never been entirely free from pis.

April 24, Cystoscoped, culture from right segment shows positive B-coli.

May 1, lavage right lower segment cultures positive.

May 7, lavage right lower segment culture negative after twenty-four hours.

segments, we have found the differential function of one segment is usually equal to the other."

This case is in accord with their findings as to the location of the pathology. They say, "that it is evident that the pathological complication is confined largely if not entirely to one segment in about one-half the cases, and further more that the lower segment is more frequently affected than the upper." Bromberg has called attention to the fact that in tuberculosis infection involving apparently only one of the two pelves heminephrectomy should not be con-



Fig. 6

Pyelogram of both upper and lower pelves of the right kidney.

This in a case of pyelitis confined to the lower or larger segment of one kidney. It resembles very closely a case reported by my colleague Dr. Bromberg at this meeting last year—differing from his in that in my case the lower or main segment of the kidney was infected while in his the upper or smaller segment was involved, otherwise the two cases are almost identical, then both show different findings as to differential functions to those of Brasch and Schroll who say "although there is usually a difference in size between the pelvis of the two



Fig. 5

Pyelogram of lower pelvis of the right kidney.

considered as it will too often have to be followed by nephrectomy. This has been necessary in one-half of the cases of heminephrectomy in Brasch's series.

I have recently seen, in consultation with Dr. Burch, another case which bears out this point clinically. A woman with double ureters on one side that would admit catheters and two ureteral orifices on the other side that would not admit catheters in either, with tubercle bacilli found in the bladder urine, evidently a case of auto-nephrectomy with both ureters closed. The so-called dead kidney or auto nephrectomy.

CONSIDERATIONS OF THE DEVIATED SEPTUM*

DR. STEWART LAWWILL, Chattanooga

IN selecting my subject of Deviated Septum, I hope to stir up a little discussion of an old subject, which should always be a live one with us. There are many conditions caused by deviated septum, which perhaps we are a little prone to forget in our daily examination of patients and which should, however, be in our minds at all times. I think often times we get lax about these conditions because we see so many bad looking septa which are apparently giving no symptoms. In my opinion, however, the possibility of pathological sequelae should be considered in every case where we find a badly deformed septum. I have seen so many cases in young adults that were giving no symptoms whatever when they were first told of their condition, but who developed later, within two or three years, the most obstinate adhesive processes and greatly impaired hearing. Of course the ultimate object in treating deviated septum is to return them as nearly to normal as possible with the least amount of destruction to the functional tissues, and before damage is done to the associated organs of hearing, etc.

To understand the physiology of the nose, one must know it is necessarily one of the most important organs of respiration and is practically indispensable to perfect health. It heats and moistens the inspired air, secreting in the twenty-four hours as much as a pint and a half of fluid, which prepares the oxygen of the inspired air for absorption by the capillaries of the lungs. I would like to keep this thought before us at all times. Any obstruction to the nose interferes with this respiratory function and results in the accompanying evils of mouth breathing, dry throat, ear manifestations, sinus troubles, and renders the sub-

ject prone to attacks of tonsillitis, pharyngitis, laryngitis, etc., which are apt to become chronic when once established, thus lowering the resistance of the individual to disease.

Among the causes of deviated septa, we might mention rickets, adenoids and traumatism. There are quite a number of theories advanced by various men as to just how deviation occurs, but the one that appeals most to me, outside of injury, is the failure of the hard palate to descend in early childhood, or persistence of the Gothic arch of the palate. Whether this is rickets or adenoid obstruction, the fact is that the palate, not descending as it should, does not allow room for the growing septum and it is made to kink upon itself. In the early ages of childhood, when a deviated septum is discovered, proper dental appliances may be used to cause the descent of the hard palate, and in many cases a child will thus outgrow a badly obstructed nose by this means, when otherwise he might go on into adult life a mouth-breather.

Whatever be the cause of the deflection, we see the following pathology:

First. If the obstruction is high up, we may have pressure on the soft parts, producing headaches, more often in the early morning in contra-distinction to headaches from eye trouble, which come on in the afternoon.

Second: We usually have blockage of the ostia of the frontal and ethmoidal sinuses, resulting in stagnation and suppuration in these cavities, or polypoid degeneration of the mucosa lining them.

Third. Should the deflection be in the region of the middle turbinate we will have inflammation in the maxillary sinus for the same reason as in the above.

Fourth. No matter where the obstruction is located, behind it we have a negative pressure with each descent of diaphragm

*Read before the Eye, Ear, Nose and Throat Section, Tennessee State Medical Association, Memphis, May 11, 12, 13, 1926.

in each inspiration. This negative pressure acts the same as Bier's hyperaemia—the turbinate body is engorged with blood and hypertrophy and enlargement of this organ soon follows. This, of course, means practically complete closure of the nasal passage on that side with pressure of the soft parts against the bony septum, pains, etc. If you will all try swallowing with the nostrils closed you will see what effect the negative pressure will have on the ears. This is what takes place in the individual with a badly deflected septum with each inspiration. The negative pressure creates a suction through the eustachian tube and causes a retraction of the drum, also a continual hyperaemia of the middle ear which results in abnormal noises in the ear, due to the congestion, and to formation of fibrous tissue and ankylosis of the bones of the ear, with more or less impairment of hearing. The enlargement of the turbinate body may encroach upon the opening of the eustachian tube, thus further interfering with the ear. Another annoying symptom of deviated septum is epistaxis. The air currents whipping around spurs or sharp corners on the septum, produce an irritation of the mucous membrane with the formation of crusts over the spurs. These crusts are whipped off and produce a bleeding surface. This condition has been known to exist for years without attention, with the natural result of chronic anemia from loss of blood. I am anxious here to know what the other men over the state are doing, and I hope I may have some full discussion in the matter of treatment. I feel that far more can be done in prevention of these conditions than in cure. If we can educate the people and the practitioner a step further than the tonsil and adenoid idea, and make them see the importance of not only removing diseased tonsils and enlarged adenoids, but teach them to be conscious of the dangers of mouth breathing, we should be able to save many years of suffering, many cases of sinus suppuration and thousands of nasal operations. We should follow up our tonsil and adenoid cases and see that these children all become proper nasal breathers. It is not enough to remove ton-

sils and adenoids and never see our cases again. The parents of these children should be instructed and made to co-operate in breaking the habit of mouth breathing in the child, where possible. When they do not succeed in a reasonable length of time, the child should be brought back for further examination and many times it will be found that these little fellows have considerable deviations of their septa, a high arched palate, receding chin, and badly crooked teeth. Where these conditions are found, it is our duty to see to it that this child is put into the hands of a competent orthodontist. These dentists are doing a great work and should be encouraged and assisted in every way by us, and we have not done our full duty to our patients if we do not see that these needing this service are not told of it and placed in the proper hands. Surely a great deal more can be done by prevention of all the horrible sequelae of deflected septa than we can do in curing them.

Submucous resection is the operation to be used in every case in correction of deviated septum. It is sometimes necessary to do, in connection with it, submucous resection of the lower turbinate, a crushing of bullous middle turbinates or cauterization of the lower turbinates, or removal of the posterior tips of the lower turbinates. But in every case the nasal septum should be put back into as nearly straight position as possible and the other tissues of the nose readjusted with as little damage as possible to their functional properties.

Where a deviated septum occurs operation is indicated: (1) If normal ventilation of the nose is interfered with; (2) if drainage of the nasal chambers and accessory sinuses is interfered with; (3) if normal functional activity of the swell bodies is interfered with; (4) if the deviation is high up, producing pressure on the middle turbinates, pain, and blockage of the frontal and ethmoidal sinuses; (5) if sinus infection exists and proper treatment cannot be instituted on account of the deflection; (6) if there is excessive irritation in the post-nasal space with cough and husky voice,

attributable to the deflection; (7) if the patient is having too frequent head colds; (8) if epistaxis, attributable to the deflection, exists; (9) if mouth breathing, attributable

to the deflection, is complained of; (10) if ringing in the ears and Eustachian tubal obstruction is present and can be benefited by it.

THE DIAGNOSIS OF BLADDER ATONY*

THOMAS D. MOORE, M.D., F.A.C.S., Memphis

THE purpose of this report is to present additional evidence in support of the neuropathic basis of bladder atony; to discuss a further point of differentiation between atony of the bladder and obstructive conditions associated with retention of urine, and to call attention to the very great importance of its recognition.

Bladder atony is a condition in which there is a loss of tone of the bladder musculature without discoverable cause, resulting in incomplete emptying or even total urinary retention. Atony resulting from mechanical obstruction and overdistention, such as occasionally results from prostatic hypertrophy, will not be considered; neither will there be included the atony commonly observed in association with lesions of the central nervous system, as, for example, cord neoplasms and traumatic myelitis.

Thompson Walker, in 1910, first directed attention to atony of the bladder and ascribed its cause to a localized lesion in the hypogastric plexus. In several cases studied at autopsy, Geraghty found no evidence of a disease process in the cord. He thought the underlying cause was a peripheral neuritis. Casper believed the condition was due to degeneration of the vesical musculature, the nervous mechanism not being affected. Chetwood stated: "It is probable that in most of them a mechanical cause exists, be it ever so small, producing spasm and obstruction of the bladder outlet and secondary atony as a result. It is believed

there are other causes in some cases not accounted for on mechanical grounds, which act through the nerve supply of the detrusor or sphincter muscles, and which are not as yet sufficiently explained." Braasch mentioned two types of atony of the bladder: Those in which there is motor disturbance alone and those in which there is both motor and sensory disturbance, evidently ascribing the cause to a lesion in the nerve supply of the bladder.

GENERAL CONSIDERATIONS

Data obtained in experimental physiology indicate that retention of urine may be wholly dependent on diminished or absent bladder sensibility. Barrington found that division of the posterior sacral (sensory) roots totally abolished micturition. Merzbacher proved the need of sensory impulses for micturition by animal experimentation; a dog whose posterior sacral and coccygeal spinal roots had been cut could wag its tail, but could not empty its bladder.

Sensory fibers from the bladder reach the cord by way of the pelvic nerves and the sacral plexus. The hypogastric nerves also convey sensory impulses as far as the inferior mesenteric ganglions, but their existence has not been proved in the sympathetic rami between the inferior mesenteric ganglions and the lumbar cord.

Three centers for reflex bladder contractions have been found: (1) in the lumbar cord, (2) in the hypogastric plexus, and (3) in the inferior mesenteric ganglions. The importance of the center last mentioned is doubtful, as its destruction pro-

*Read before the Tennessee State Medical Association, Memphis, May 11, 12, 13, 1926.

duces no apparent effect on micturition.

The centers in the hypogastric plexus and lumbar cord are seemingly fertile fields for degenerative processes, single or multiple, and not necessarily of wide extent, causing impairment of the function of micturition. Unfortunately, an opportunity has not arisen for the pathologic study of a neuropathic bladder, the suspected cause of which was a local or peripheral lesion in its nerve supply. Clinically, however, as will be shown in a series of such bladders, sensibility was either diminished or

ings, through destruction of the center in the hypogastric plexus, or both.

DIAGNOSIS

as failure to recognize the condition is too

The proper diagnosis of atony of the bladder is extremely important, inasmuch often the cause of an entirely useless operation, such as prostatectomy or the punching of a suspected contracture of the vesical neck. Of the three cases herewith reported, two had been subjected to prostatectomy. Such measures, of course, are not only useless, but may be distinctly harmful.

The outstanding diagnostic feature of this condition is the large amount of residual urine which cannot be accounted for by an obstruction, nor by a lesion in the central nervous system. The most painstaking cystoscopy and urethroscopy will not reveal an obstructive condition nor will a careful neurologic examination show evidence of disease in the spinal cord or brain. The spinal fluid is negative.

VESICAL NEUROLOGIC TECHNIC

Muscle Tone. In 1922 the writer became interested in bladder neuropathies and developed a method for studying clinically the nerve supply of the bladder. In order to obtain accurate information as to the status of the musculature of the bladder the intravesical tension was recorded by means of a water manometer. This was considered an index of the integrity of the motor nerves. The patient was placed in the usual position for cystoscopy, an ordinary rubber catheter of suitable caliber was inserted, and the bladder completely emptied. A water manometer was connected with the catheter along with a T-tube for the intake and outflow of liquids. The tubing, exclusive of the manometer, was then filled with warm boric acid solution and the lower end of the manometer was fixed at that point where the contained liquid registered zero. The bladder was then slowly filled to capacity with the solution and readings taken after the injection of each 100 c.c. The bladder was considered completely filled when the patient complained of discomfort

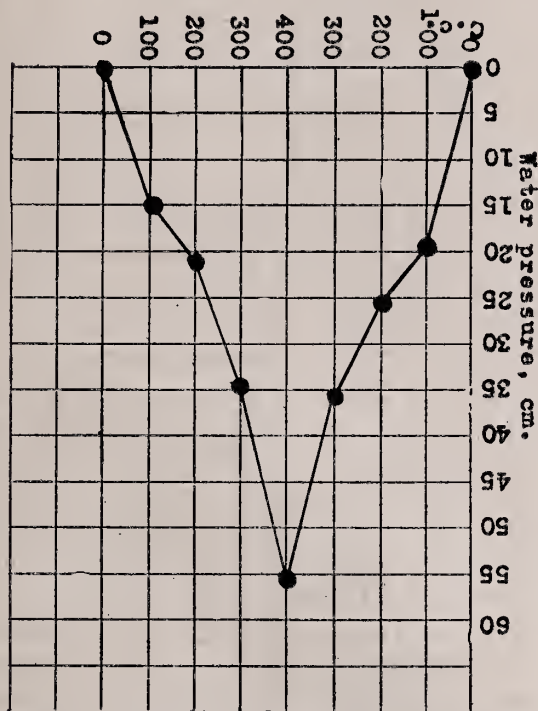
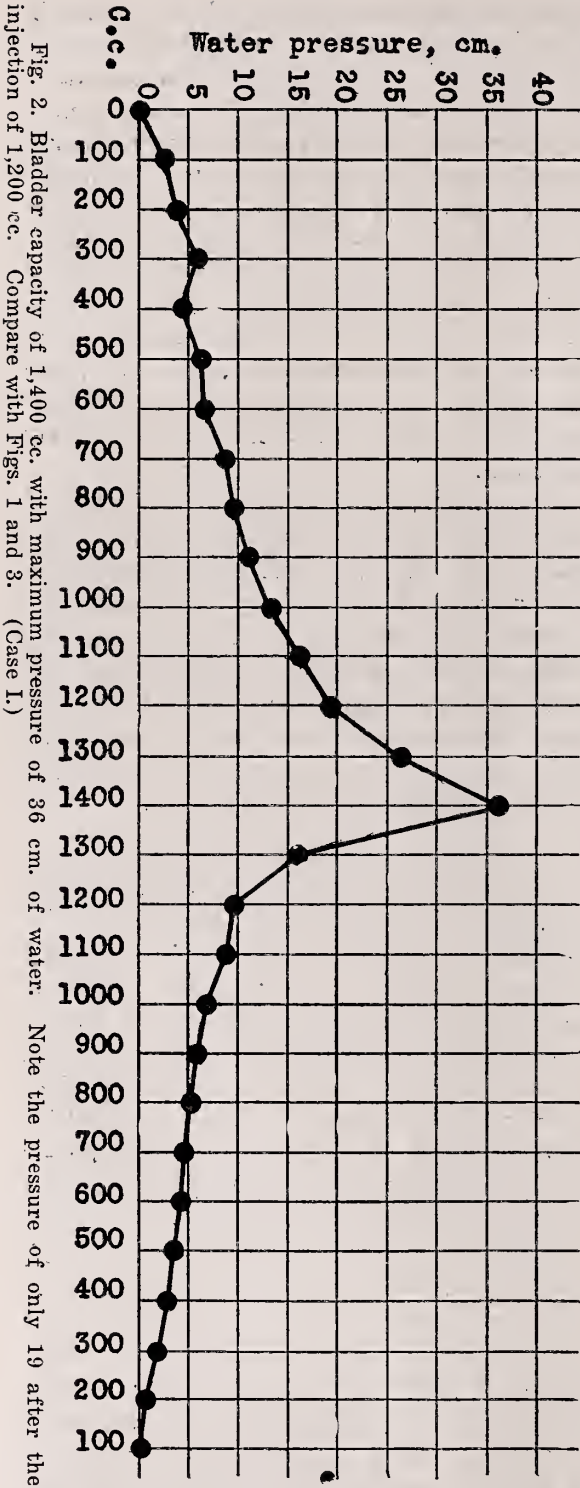


Fig. 1. Curve obtained in normal bladder; capacity 400 cc.; maximum pressure 55 cm. of water. Note the sharp rise after the injection of each 100 cc. of water, indicating tonus and elasticity normally present.

absent and often associated with disturbances in the muscular tone. This must be considered as indicating that those cases of so-called cord bladders, with absence of other evidence of lesions in the central nervous system, are probably dependent on a lesion or lesions affecting the nerve supply of the bladder, either from interference with the vesical center in the spinal cord, or, as would seem more reasonable in view of the otherwise negative neurologic find-

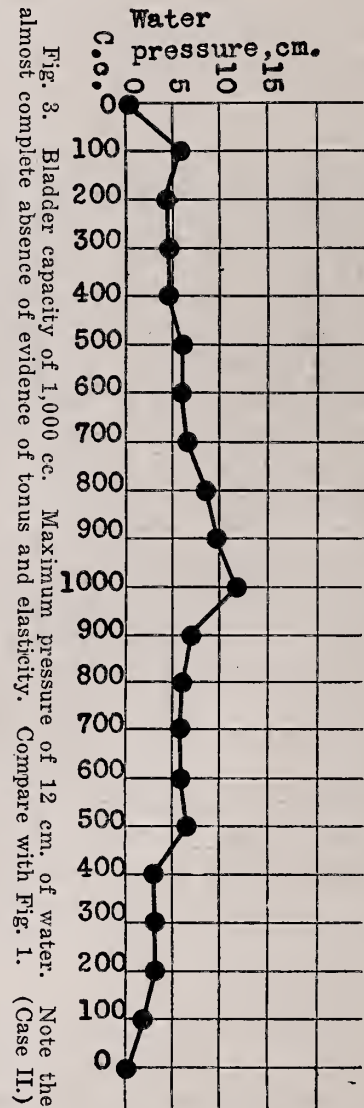


and a strong desire to micturate. The fluid was then released and readings again taken after each 100 c.c. escaped until the bladder was emptied.

Sensory tests. Tactile sensation. By use of a Braasch direct cystoscope, and with-

out anaesthesia, responses to the sensory stimuli of touch, temperature and pain were elicited. For tactile sensation a No. 5 ureteral catheter was utilized after an ordinary white-headed pin had been securely fixed in its tip.

The bladder was moderately distended with water at body temperature, and under visual guidance the white bead was direct-



ed over the whole of the bladder mucosa and two or three cm. of the vesical end of the urethra, the patient having been instructed to signify by saying "now" whenever the touch of the bead was felt.

Thermal sensation. The response to thermal stimuli was next investigated. No satisfactory means has been discovered by

which the fluid-distended bladder can be studied with rapidly alternating warm and cold esthesiometers. For this reason the collapsed bladder was tested with hot and cold knobbed applicators. These were constructed of small guage steel wire, 30 cm. in length, at one end of which was fixed a glass knob two cm. by four mm.

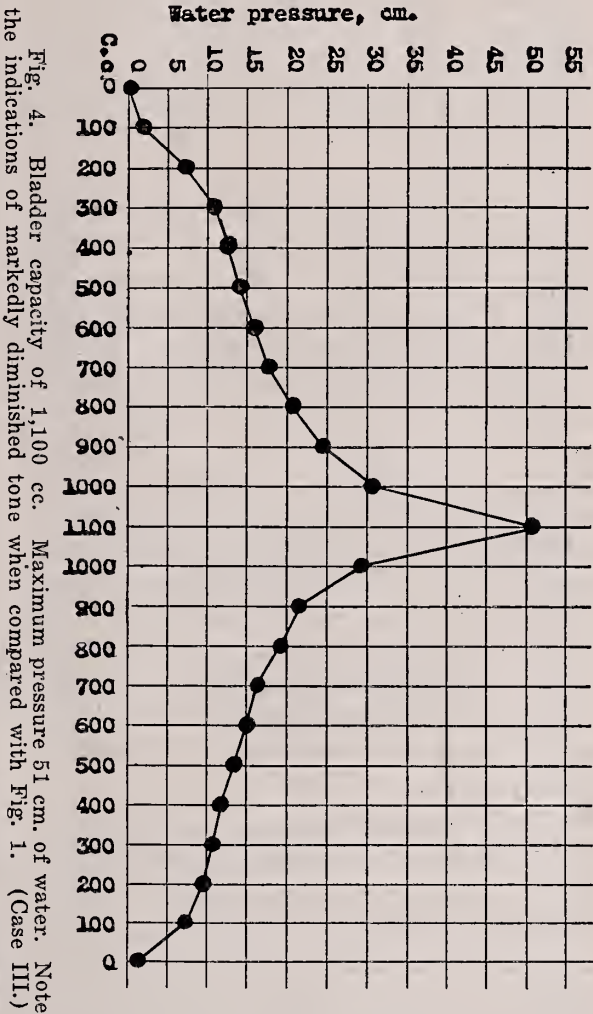
The small guage wire was necessary in order to prevent the radiation of temperature through the barrel of the cystoscope to the sensitive urethra. One of these was placed in a wide-mouthed bottle containing a small amount of sterile water heated to about sixty c. Another was similarly placed in water cooled to about fifteen c. With the cystoscope in position and the bladder completely emptied of fluid, the instruments were rapidly passed into the bladder and the patient requested to state the resulting sensation. By directing the beak of the cystoscope to various parts of the bladder, a fairly satisfactory estimate of the thermal response was obtained. Waltz, in testing the thermal sensibility of the bladder, used a double-walled catheter, through which he allowed warm and cold liquids to flow. This method was considered unsatisfactory because of the prolonged application of the stimulus, and the wide area to which it was subjected. A brief contact with a small area was deemed more desirable.

Pain sensation. Pain sensibility was studied by means of the white bead and a second catheter in which was fixed a small needle, the point of which barely protruded beyond the catheter tip. With the bladder distended with water at body temperature and with the catheters in place in the double catheterizing guide, the mucosa of the bladder and posterior urethra was gently touched in many areas with the bead and needle point and the patient requested to state whether the resulting sensation was dull or sharp.

DATA OBTAINED IN CASES OF BLADDER ATONY

The motor and sensory fibers of the nerve supply have been studied in three patients herewith reported having atony of the bladder. The accompanying charts illustrate

the curves obtained by use of the water manometer. The bladder may be filled almost to capacity before there is a definite rise in intravesical tension. This is in contradistinction to the abrupt rise following each 100 c.c. injected into a normal bladder. (Fig. 1.) The curve obtained on emptying is very similar; there is a sudden drop after the removal of the first 100 c.c., usually to a point below that for the cor-



responding amount contained in the bladder while being filled. A level is almost at once reached and approximately maintained until the bladder is nearly empty. (See Figs. 2 to 4.) Such a curve, when compared with the normal, indicates two definite conditions: An increase in bladder capacity and a decided loss of muscular tone or contractility. Clinically this is evidenced by the great difficulty, or even im-

possibility of micturition which these patients experience. In order to expel urine a prolonged initial effort is made, marked by much straining. Intra-abdominal pressure is often assisted by pressure with the hands over the lower abdomen. The stream is dribbling and falls without force perpendicularly from the urethral meatus. Should a catheter or cystoscope be inserted (which is a very satisfactory and practical way of testing the tone of the bladder musculature), the flow is slow and small. In the presence of such marked flaccidity of the bladder detrusors the integrity of the motor fibers of the nerve supply must be questioned.

Sensory responses may vary from normal to complete anaesthesia. In Case II reported herewith tactile sensation was normal. In all, the response to thermal and pain was diminished in varying degrees. In Case III, when first examined, although there was a large amount of residual urine and low intravesical tension, the response to all sensory stimuli was normal. Three months later, however, the amount of residual urine had increased from 715 c.c. to 980 c.c., and definite impairment of sensibility had supervened, which was interpreted as evidence of progression of the lesion affecting the bladder nerve supply. A second examination of the central nervous system was made and was again reported normal.

In the complex nervous mechanism of the bladder it is difficult to conceive of a lesion which might limit itself to the efferent fibers, although such conditions have been proved to obtain in other parts of the organism, as, for example, in post-diphtheritic neuritis, there may be involvement only of the motor fibers of the affected nerve.

Cases have been observed in which the sensory fibers alone were apparently involved. It is conceivable that the absence of the impulse to initiate the act of micturition might result in overdistention, incomplete emptying and ultimately in atony of the musculature.

CASE ABSTRACTS

The curve of intravesical tension, expressed in centimeters of water pressure, was recorded in the three cases reported.

In charting the sensory findings sensation was graded from minus four to plus four, the former indicating total anaesthesia and the latter marked hyperaesthesia; zero was taken as normal. Tactile sensation is recorded in plain Arabic numerals, thermal sensibility is indicated by Roman numerals, and sensation for pain by enclosed Arabic numerals. Figs. 5 to 7 show graphically the variations from normal in the three instances of atonic bladders with disturbances in sensation. The sensibility

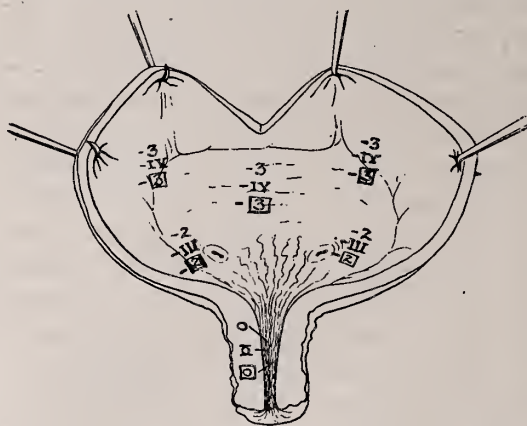


Fig. 5. Bladder sensibility markedly reduced to touch, temperature and pain. (Case I.)

Note: In Figures 5, 6 and 7 tactile sensation is recorded in Arabic numerals; thermal sensibility, in Roman numerals, and sensation for pain by enclosed Arabic numerals.

of the vesical end of the urethra in each case is also indicated.

Abstract of Case I (**A418511): F. G. H., a man, aged sixty-six years, had had an insidious onset of urinary difficulty two years before, with slow stream and terminal dribbling. His home physician had accidentally discovered an over-distended bladder, and diagnosed "silent prostate." Prostatectomy and later a punch operation were performed without relief. Residual urine of 450 c.c. persisted.

A cystoscopic examination revealed moderate relaxation of the internal sphincter and marked, generalized, fine-meshed trabeculation. There was no obstruction. The neurologic examination was negative. The bladder sensibility was markedly reduced to touch, temperature and pain. (Fig. 5.) The intravesical tension was abnormally low. (Fig. 2.) The Wassermann reaction of the blood was negative.

Abstract of Case II (A402028): P. A. C., a man, aged fifty years, had experienced increasing

difficulty of urination eighteen months. The residual urine amounted to 1200 c.c. The prostate was slightly enlarged and possibly causing obstruction. A suprapubic prostatectomy was performed without relief from the retention. The Wassermann reaction on the blood was negative. The neurologic examination, including study of the spinal fluid, was negative. Intravesical tension was very low. (Fig. 3.) The bladder sensory tests disclosed normal tactile sensation and practically complete absence of the thermal and pain sensibility. (Fig. 6.)

Abstract of Case III (A21033): R. D., a woman, aged twenty-three, was able to retain urine for twenty-four hours without discomfort or desire to micturate. There were no other bladder symptoms. Urinalysis and roentgenogram of the kidneys, ureters and bladder were negative. Cystoscopic examination revealed no obstruction. The bladder capacity was 997 c.c., and there was 715 c.c. of residual urine. The intravesical tension was abnormally low. (Fig. 4.) The bladder sensibility was normal for all tests. The neurologic examination, including study of the spinal fluid, was negative. Three months later the bladder capacity had increased to 1125 c.c. and the residual urine amounted to 980 c.c. The responses to tactile, thermal, and pain stimuli were definitely diminished. The neurologic examination was again reported negative. (Fig. 7.)

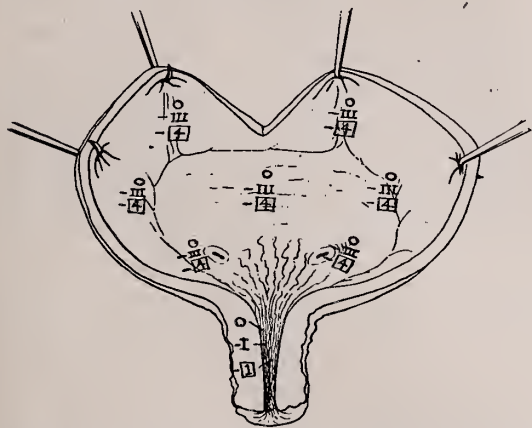


Fig. 6. Bladder sensory tests disclosed normal tactile sensation and complete absence of thermal and pain sensibility. (Case II.)

SUMMARY AND CONCLUSION

1. The diagnosis of bladder atony is important because of the evident tendency to ascribe the patient's symptoms to some obstructive condition, resulting in futile surgical interference. Two of the cases reported had been subjected to prostatectomy without relief, due to such erroneous diagnoses.

2. The outstanding features of the disease are five in number: (1) Marked urinary difficulty; (2) residual urine, usually a large amount; (3) the absence of any

discoverable obstruction to the urinary stream; (4) poor detrusor tonus as noted by the slow dribbling from an inserted catheter or manometer reading, and (5) diminished sensory responses.

Three patients, two men and one woman, having atony of the bladder, were subjected to careful examination of the central nervous system, including study of the spinal fluid. In all of them the results were negative. Studies of the intravesical tension with a water manometer revealed a curve somewhat typical of the disease. Bladder sensory tests disclosed varying degrees of anaesthesia for tactile, thermal, and pain stimuli. These findings favor the opinion that atony of the bladder is dependent upon some disturbance in the local nerve supply, probably a degenerative process involving the hypogastric plexus or interference with the reflex tract through the vesical center in the lumbar cord.

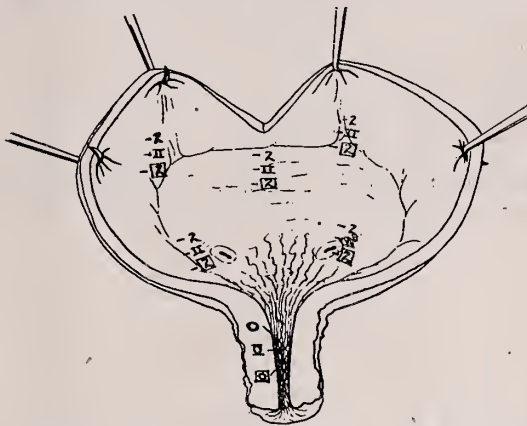


Fig. 7. Bladder sensibility moderately reduced to touch, temperature and pain. (Case III.)

4. Sensory tests and studies with the manometer are believed to yield information of definite value in the differentiation of atony of the bladder from urinary retention dependent upon obstructive conditions.

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DISCUSSION

DR. I. G. DUNCAN, Memphis: I did not get to hear all of Dr. Moore's paper, but the paper is one very timely and very carefully gotten up and of considerable value.

As the doctor says, there have been quite a few cases operated on for supposed obstruction due to prostatic conditions that were really due to paresis of the bladder. He has gone very thoroughly into the test of the bladder wall for sensation of pain and so forth.

There is one point that I wish to especially emphasize, that even where the trouble is due to the prostate, you cannot always make a diagnosis by rectal examination. In hypertrophy of the median lobe frequently the prostate, per rectum, is apparently normal, but by cystoscopic examination you will be able to find this obstruction in the bladder itself. The prostate grows back into the bladder instead of anteriorly, and in that way it is not felt per rectum.

DR. THOMAS D. MOORE, Memphis (closing): I wish to thank Dr. Duncan for the discussion. I wish to point out that these cases are reported in abstract. It was deemed unnecessary to burden you with the detailed findings and treatment. This report concerns chiefly the importance of recognizing the condition.

Dr. Duncan mentioned that median lobe obstructions are apt to be confused with bladder atony unless a cystoscopic examination is made. In these cases every conceivable obstruction was considered and ruled out by careful cysto-urethoscopic study.

SOME PROBLEMS IN SURGERY OF THE NERVOUS SYSTEM*

THOS. D. MCKINNEY, M.D., F.A.C.S., Nashville

THIS meeting marks the sixty-fourth semi-annual session of the Middle Tennessee Medical Association. In the ethical standing of its members, in the quality of scientific work, and in the spirit of professional fellowship, this association has held the forefront of medical organization. It has always stood for the highest ideas in the profession. In view of these facts, and with a consciousness of the type of men who have preceded me in the office of President, to say that I am deeply grateful for this honor you have bestowed upon me, expresses in but a feeble way my sincere appreciation.

To many of us, with little originality, the task of writing, particularly under compulsion, is looked upon with no little misgiving. However, one cannot ignore the obligation imposed by custom, of presenting, as your presiding officer, some subject in which he is at the time particularly interested; in this way justifying himself insofar as he may be able. With this in view I have selected to discuss on this occasion some of the problems in surgery of the nervous system.

Until comparatively recent years, organic disease of the nervous system had been looked upon as an almost hopeless condition, especially insofar as it was amenable to surgical measures. The diagnosis having been made, the patient was considered hopeless and consigned to permanent invalidism or early death; and the latter was often hoped for as an escape from the former. Today surgery offers relief or complete cure to many of these patients. Nature, in her provision for the preservation of the species, has protected the vital organs of the body in a way that those most necessary to life are most secure. Thus the most important

portions of the central nervous system are almost completely encased by bone. This provision on the part of nature in offering the most protection where most needed has been one of the greatest barriers to the application of surgery to diseases of the brain and spinal cord.

Knowledge of the complex and intricate problem of the disorders of the nervous system has increased slowly and numerous problems yet remain to be solved. However, enough is understood to enable us to diagnose and localize with a reasonable degree of certainty, many lesions of the central nervous system and to deal with them surgically. The most notable advance in the field of neurological surgery has been made in the past two decades. Some of the factors contributing to this advance: first, the foundation work done by pioneers in this field. And the names of Sir Victor Horsley, von Eiselsberg, Krause, Chipault, Keen, Hartly and Cushing, stand out pre-eminently, second, the improved methods of neurological examination which have made possible an early diagnosis, and, third, a more intimate and sympathetic understanding between the neurologist and the neurosurgeon. This implies that one essaying to do this type of surgery should have a knowledge of the structure, functions and pathology of the nervous system comparable to that of the neurologist: to the end that he may intelligently advise what may or may not be done surgically for the betterment of the patient.

Another important factor in this advance is the development of the elaborate and intricate operative technic so necessary to successful surgery of the brain and spinal cord. The features in technic which have contributed very largely to a lowered operative risk are the invention of instruments applicable to the task to be performed, the

*Presidential address read before the Middle Tennessee Medical Association, sixty-fourth semi-annual session, Dickson, Tenn., October 14, 1926.

use of local anesthesia instead of general anesthesia, strict asepsis, complete hemostasis, the avoidance of trauma to nerve and brain tissue and, finally, the more frequent utilization of blood transfusion following operation. With the employment of the principles of this technic in the operative management of a neurosurgical patient, operation may be undertaken, exploratory or otherwise, with a relatively small risk.

HEAD INJURIES

Serious head injury is perhaps the most frequent neurosurgical condition encountered. Within the past few years there has been a very striking reduction in the high mortality rate in this group of cases. Broadly speaking, this has been accomplished by a full appreciation of the fact that fracture of the skull bone, either vault or base, is only of secondary importance. The real problem for consideration in injuries to the head is the damage done the underlying brain tissue. Viewing the injury in this light there is a growing tendency to a more conservative treatment of these patients. Consequently, the proportion of cases in which operation is done has been greatly reduced.

Operation is indicated without question in vault fractures with depression of bone and in cases with definite evidence of intracranial hemorrhage. Traumatic cerebral edema follows injury in practically every case whether or not there has been a fracture of the skull. This edema does its damage by increasing the intracranial pressure to the point of interfering with the intracranial blood circulation. The results are anemia and finally exhaustion of the vital centers of the medulla. With these facts before us it is not difficult to understand the inadequacy of decompressive operations when done for relief of high intracranial pressure which has resulted from a widespread cerebral edema. In reduction of increased intracranial pressure resulting from injury we have come to rely much more strongly on the removal of the edema by administration of hypertonic salt and glucose solution, at times these are supplemented by cautious withdrawal of cerebro

spinal fluid. Hypertonic solution of magnesium sulphate, sodium chlorid or glucose administered by mouth, by rectum or intravenously, effect the reduction of intracranial pressure by raising the osmotic pressure of the blood which in consequence abstracts from the brain tissue, the edematous fluid which is of a lower osmotic pressure.

In a series of thirty-two cases with severe head injury treated during the past year, we have not felt it necessary to do a decompression operation for the relief of intracranial pressure caused by edema, in a single instance. Although to many this may seem ultra conservative, we have not yet found reason to discontinue this plan of management.

BRAIN TUMORS

Brain tumors present the most interesting, and at the same time the most baffling problem in the entire field of neurological surgery. The discouraging feature rests not so much in the operative risk as in the relatively high percentage of malignancy encountered in these tumors.

The question is often asked: what is the outlook in a case of brain tumor? An attempt to answer this question categorically would be as futile as trying to answer the same question as to "a tumor of the abdomen." In the cranial cavity as in the abdominal cavity no general rule can be formulated which is applicable to all cases. The questions of the presence or absence of malignancy, the location, the removability, the duration of the growth and the amount of irreparable damage already done, are all factors influencing the prognosis in the individual case. In as much as some of these factors can only be definitely determined after an exploratory investigation, every patient who has a localizable brain tumor is entitled to an early exploration to the end that serious and permanent damage to the brain may be prevented. Delay because of the seriousness of the condition, robs the patients of their chance of cure, and greatly increases the surgical risk. It is a disturbing experience for the neurological surgeon to successfully remove a large

tumor and still have a patient crippled or totally blind for life—a result of damage caused by delaying operation.

The incidence of tumor of the brain is far higher than is generally suspected. One to two per cent of autopsies reveal some type of brain tumor. Since the opening of the new Vanderbilt Hospital, a little more than a year ago, we have registered sixteen cases as "brain tumor"—verified and unverified—from a total admission of about 2800 patients, which is more than one in two hundred admissions. Every patient with evidence of chronically increased intracranial pressure should be listed as a "brain tumor suspect" and kept under close observation. The classical symptoms—headache, vomiting and choked discs—may not all be present. Other suggestive symptoms are mental dullness, vertigo, convulsive seizures and double vision. Tumors developing in so-called silent areas may present no localizing signs. In such cases x-ray pictures after trephine and ventricular air injection may be of great diagnostic aid.

From the standpoint of surgical treatment the gliomas, which are true brain tissue tumors, constitute the most discouraging group. These tumors have a tendency to malignancy and infiltration, and complete removal of the growth is often impossible. Radiotherapy, in conjunction with decompression operations offers prospects of benefit in certain tumors of this type.

The pituitary tumors although not strictly tumors of the brain, have to be dealt with as such. These tumors are usually benign and because of their close proximity to the optic chiasm produce very early characteristic changes in the visual fields. Operative removal of the growth or decompression of sella turcica is demanded for relief of the direct pressure on the optic tracts, which rapidly produces blindness.

The meningiomas—tumors arising from the meninges—offer the most favorable outlook from the standpoint of surgery. They are usually benign and do not infiltrate the brain substance. Their more accessible location and benign nature permit of com-

plete removal, with little likelihood of recurrence.

Another favorable group is found in the neurimomas of cerebello-pontine angle. These tumors arising from the acoustic nerve are often designated "acoustic tumors." While these tumors are encapsulated, they as well as the pituitary adenomas usually have to be removed by intracapsular enucleation.

While the final results in surgery of brain tumors are far from satisfactory, these results even at present, certainly offer enough encouragement to justify a continued effort toward improvement.

"SEPTIC" MENINGITIS

Recently surgery in the treatment of so-called "septic" meningitis has been employed with a measure of success. Continuous drainage is accomplished by the insertion of a rubber tube into the basal cisterna magna.

This plan employed in cases due to either staphylococcic or streptococcic infection offer a fair chance of success in these otherwise hopeless patients.

SPINAL CORD INJURIES

The application of surgery to injuries of the spinal cord is still a mooted question. There is a group of surgeons who are inclined to be radical and recommend exploratory laminectomy in every case on the basis that it is impossible to know without operation the exact pathology that exists. On the other hand there is an ultra-conservative group who refuse to explore on the grounds that few cases are benefited by operation. Between the two extremes may be found a more reasonable group who by careful analysis of the symptoms of the patient, neither operate indiscriminately nor refuse to operate where there seems a reasonable chance of benefit to the patient. This attitude is commended by its basis of scientific study of the individual case.

TUMORS OF THE SPINAL CORD

Tumors of the spinal cord afford one of the most satisfactory fields in neurological surgery. This is due to the facts that they are infrequently malignant, are diagnosed relatively early, can be more accurately lo-

calized and are usually extra medullary, thus begin more easily and completely removed without damage to the cord. Intramedullary tumors are obviously more difficult to remove and at the same time are more often malignant. The same careful technic is required in operations on the spinal cord as obtains in operations on the brain.

CORDOTOMY

By cordotomy is meant sectioning the antero-lateral fiber tracts of the spinal cord. These tracts convey sensation of pain and temperature to the brain. Sectioning the fibers of these tracts produces anesthesia and the anesthesia of the area below the level severed without disturbance of other functions. This procedure has a definite field of usefulness in conditions producing intractable pain in the lower portion of the body as met with most often in cases of incurable malignant growths.

MAJOR TRIGEMINAL NEURALGIA

Trigeminal neuralgia or Tic Douloureux is one of the most distressing conditions that may befall a patient. The spasmodic agonizing pain unrelieved by medicine soon bring the patient to the surgeon. Injections of alcohol into the peripheral branches afford relief in most cases. The effect is only temporary, lasting usually a few months. Repeated injections become progressively less effective until finally more certain and permanent relief is asked of the surgeon.

The older procedure of removal of the gasserian ganglion was a most formidable operation and carried a mortality rate of approximately twenty per cent. A risk hardly justifiable even in such a distressing condition. The modern so-called radical operation for trigeminal neuralgia is sectioning the posterior sensory root of the ganglion and has a mortality rate of about one per cent. Under local anesthesia, later supplemented by ether, the skull is trephined in the temporal region and the dura lifted from the floor of the middle cranial fossa. The middle meningeal artery is ligated and cut. The posterior aspect of the ganglion is exposed. With special electrically lighted retractors a very clear view of the posterior root is obtained and this root is partially sectioned, avoiding the small motor root supplying the muscles of mastication. The upper and inner third—the fibers passing to the ophthalmic branch—is left intact in all cases in which the pain is limited to the area below the eye. This subtotal section of the sensory root leaves corneal sensation intact and avoids the resulting keratitis and corneal ulceration which complicate the complete removal or the injections into the ganglion. In the certainty of relief, the small operative risk, the satisfaction to both the patient and surgeon, and in the refinement and perfection of technical detail, this delicate operation stands out as probably the most highly perfected operative procedure in the entire field of surgery.

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J. F. GALLAGHER, M.D. ----- Editor

FEBRUARY, 1927

DEATHS

Dr. J. Hugh Carter, of Memphis, aged 47, died February 8th. Dr. Carter was a graduate of the Memphis Hospital Medical College in the class of 1905.

MEDICAL SOCIETIES

The first annual meeting of the Hawkins County Medical Society was held February 16, and Dr. R. A. Doty, of Rogersville, was elected president. Dr. J. S. Lyons, Rogersville, was re-elected secretary-treasurer, having served the society in this capacity for sixteen consecutive years.

NEWS NOTES AND COMMENT

Dr. Walter S. Leathers, professor in the Vanderbilt Medical School, and Dr. Beverly Douglas, assistant dean, attended the annual congress on medical education, licensure and hospitals which met in Chicago February 14th.

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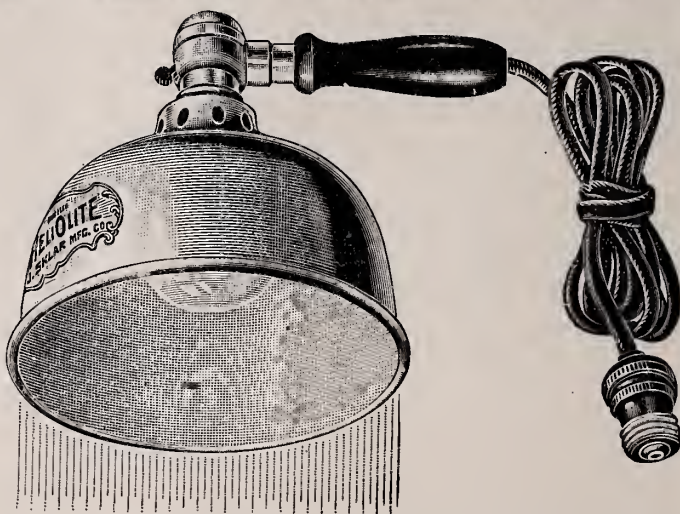
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Number 11

REVIEW OF IMPROVED TREATMENT OF CERTAIN FRACTURES*

DUNCAN EVE, SR., Nashville

As a preliminary I would suggest that reduction is easier and more satisfactory when the patient is under an anesthetic, in order to obtain muscular relaxation.

The underlying principles in the treatment of all fractures are of necessity fixation and traction, as rest and extension prevent pain and muscular contraction. All splints with few exceptions, should be removed frequently to allow massage and passive movements which greatly assist fractures in uniting more readily. They also promote early return of function.

To consider the suggestions as to improved treatment of these fractures, I will take them up regionally.

Simple fractures of the Vault of the Skull, with marked depression, require trephining, even when brain symptoms are absent, to prevent disastrous consequences arising later. However, it is best always to make an exception in young children, as they do not withstand trephining or brain operations well. Wait a while before trephining in such cases, as the expansile brain may lift the depressed but elastic bone up to the level, or general contour. We have witnessed recovery in a good many such

cases with considerable depression without an operation. The depressed skull resumed its normal shape, without ever having a complication later.

Fractures, especially at the Base of the Skull. Dehydration by the use of magnesium sulphate and lumbar puncture are the most conservative and dependable methods of relieving pressure symptoms. Many surgeons never resort to decompression operations for relief of pressure symptoms until dehydration and lumbar puncture are first tried out.

Fracture of the Zygomatic Arch, is usually at the smallest portion of the process and on the temporal side of the temporo-malar suture. In Matas' operation, with the patient anesthetized and the parts antiseptitized, a large curved Hagedorn needle threaded with silk is entered one inch above the middle of the displaced fragment (which usually is inward and downward). The needle is passed well into the temporal fossa, and is made to emerge one-half inch below the arch. The silk is used to pull a silver wire around the fracture and this wire is employed to pull the bone into position. A firm pad is applied externally and the wire is twisted over the pad. Antiseptic dressings are applied, and on the tenth day the wire is removed. We have used this plan in our clinic with perfect satisfaction.

*Read before the Association of Railroad Surgeons, Section Tennessee State Medical Association, Memphis, May 11, 12, 13, 1926.

Fracture of the Inferior Maxillary bone: Pilcher has shown that if the lower jaw is fractured in the region of the molars, considerable pressure is required to get the fragments into position, and that no retentive appliance is better than a vulcanite interdental splint. The vulcanite plate can be had at any dental depot or dental supply-house, and while you can apply the plate yourself, it is best always to call in a dentist to assist you. The plate should be applied as soon as possible after the bleeding of the gum quits, for the mandible is nearly always an internal compound fracture and also frequently comminuted. To prevent or limit infection, we make an application of a twenty-five per cent solution of carbolic acid and in a few minutes cover this area with Horsley's antiseptic wax, the formula of which is: one part of salicylic acid, one part of almond oil and eight parts of bee's wax. The fracture being reduced and the plate having been heated and molded or set to fit the arch of the lower jaw, the dentist now cements the interdental vulcanite plate to the lower teeth. This is allowed to remain for two and a half to three weeks, unless infection requires its removal in a shorter time, in which case, after the relief of the infection, it is reapplied and kept in place for a longer period of time.

The ordinary cement used by dentists holds the fragments firmly, except where the fracture is near the symphysis, or near the angle of the bone. We have been using the plan of treatment described for the past few years. It is astonishing that it is not more generally employed, for we know of no better plan.

Fractures of the Clavicle are rarely treated in an adult without more or less deformity resulting. We know of no better plan of immobilization than a Sayre's dressing with an axillary pad, if the patient is allowed to be up and moving around. But if you want to obtain a perfect result, as is often desired in a young woman who attends fashionable entertainments in low neck and short sleeves attire, you should adopt T. P. Pick's plan, of having the pa-

tient lie on her back on a hard mattress with no pillow under the head, and with a longitudinal pad rolled up of domestic, twelve inches long and three inches in diameter, held by adhesive strips on the back, between the scapulae. The forearm of the fractured clavicle side is placed in a sling at a right angle across the chest, and a bag of shot (twenty-four pounds) over the site of fracture for the required time of two and one-half to three weeks. The patient should not be allowed to turn over, or even move the lower limbs to any extent. By the adoption of this plan of Pick's, we can assure you the result will be as good as if the fragments had been wired.

Fractures of the upper end of the humerus. Fractures of anatomical neck, surgical neck, oblique and longitudinal fractures of the head, T- and Y-fractures into the joint and separation of the upper end of epiphysis, all may be grouped under this heading, as they require pretty well the same treatment. The upper fragment, when not impacted, is abducted and rotated outwards (notably is this true of fractures at the surgical neck, which is the more common, as well as the more important one). This abduction and rotation outwards is due to the action of the supra and infra-spinatus and teres minor muscles and can't be overcome, therefore this and all the other fractures of the head and neck should be treated by bringing the lower fragment into alignment with the upper, by using an abduction or aeroplane splint, in order to obtain the best results. The Du Puy Mfg. Co. makes this splint of aluminum and being light, is very comfortable.

Fractures of the shaft of the humerus. While the prognosis is usually good in these cases, it must be remembered that this bone is more subject to non-union than any other long bone. Treves believes this is due to the entanglement of muscles between the fragments, lack of fixation of the shoulder-joint and imperfect elbow support. Hamilton believes that it is due to the fact that the elbow soon becomes fixed at a right angle, and that any movement of the fore-

arm, moves the seat of fracture, and not the elbow.

We believe that both of these authorities are correct as to the causes, and on this account insist on the use of an internal right-angle splint and shoulder-cap in order to immobilize the fore-arm, as well as the arm, and also to give the proper fixation of the shoulder-joint. In this way we can't help obtaining the best results.

Fractures of the Elbow. We agree with Jones of Liverpool, that splints and bandages are largely responsible for the stiffness which so commonly follows these fractures. He advocates therefore, treatment by supination of the fore-arm and acute flexion, in all elbow fractures, except the olecranon. It has been clearly demonstrated by Drs. Harold Newhoff and Heinrich F. Wolf of New York City, in 1916, that the position of acute flexion, with supination of the fore-arm, forces the fragments into place and holds them firmly between the coronoid process of the ulna, the trochlear surface of the ulna, the fascia and the triceps tendon.

Flexion is maintained by fastening a bandage around the wrist and neck. The bandage around the neck can be passed through a large rubber tube, which protects the neck from excoriation. The ball of the thumb of the fractured member should rest on the neck. The bandage can be fastened to a leather band around the wrist or to a glove, the fingers of which had best be cut off.

To refer more specifically to this valuable contribution of Drs. Newhoff and Heinrich, their report includes simple and comminuted fractures, fractures of the lower end of the humerus, in fact all type of fractures of the elbow, except the olecranon. Out of 100 cases reported only nine were adults. Early passive movements and massage was made in the first week and never later than the second week. Hypoflexion is as potent in the control of the carrying angle as it is for leverage. The axis of the arm and fore-arm in hyper- or acute flexion coincides, and thus the "carrying angle" is maintained. We never use a

splint, except occasionally in an adult, who has a compound, or inter-condylar T- or Y-fracture.

Fractures of the Olecranon Process. We frequently employ Murphy's method of subcutaneous extra-articular wiring. When the fragments are separated, non-operative treatment often fails, and then too, the operation does not open up the elbow-joint and for this reason ankylosis is not so much to be dreaded.

Colles's Fracture. We wish to insist on two principles in treatment. First, do not immobilize the fingers, and, second, always use an anesthetic for reduction. If reduction is not complete, there is pain, which denotes that the fracture has not been properly reduced.

Fractures of the Neck of the Femur. In our opinion there is but one way to treat successfully either an intra- or extra-capsular fracture of the neck of the femur, and that is the Royal Whitman plan of abduction. "The extremity is set in extension and extreme abduction" for the tension of the capsule pushes the outer fragment against the inner and holds it. Fixation is obtained by the neck of the femur being in contact with the acetabulum and the great trochanter with the pelvis. Deformity cannot be caused by muscular action, for the psoas helps pull the fragments together." (Whitman). We generally use a Hodgen's splint suspended from a Balkan frame, as it is so convenient, to make extension. You can use a Thomas splint in the same way, or even immobilization by use of a plaster-of-paris cast.

We have a patient in whom we have just finished an eight weeks treatment. He is 76 years old, and while we have not measured his limb, we have had an x-ray skigram which shows a perfect result. We don't believe he has more than one-fourth of an inch of shortening.

Fractures of the Shaft of Femur. In our opinion, these fractures should be reduced on a Hawley's fracture table, under the fluoroscope. There is no plan of reduction that compares with the results obtained by the use of this table—we accomplish re-

sults we could not before its introduction. As to the plan of immobilization, any of the improved appliances will answer for the lower two-thirds of the shaft. For the upper third fractures, if conservative methods are to be employed, we favor the double inclined splint of Agnew (sometimes called McIntire), with the extension in the axis of the partially flexed thigh. By any plan, except the operative or open, there is apt to result some angularity or overlapping. The operative plan has been attended with unusual mortality, unfortunately.

The January, 1925, number of the American Journal of Surgery contains an article regarding the treatment of fractures of the femur at Johns Hopkins Hospital, from which we quote the following: "After three weeks in a Hodgen's splint, suspended from a Balkan frame, the period in the hospital is greatly reduced."

Fractures of the Patella. When the fragments are widely separated an open operation is required on account of the fibroperiosteal membrane dropping between the fragments and thus preventing firm union. Operation may be performed on the fifth to seventh day.

The operation in transverse fractures is very simple. Through a transverse or longitudinal incision, free the joint of blood-clots by irrigation with hot salt solution. Remove all tissue from between the fragments and, if there is no tendency to separation, the fragments can be held together by several catgut sutures through the capsule. When there is considerable separation of the fragments, or when the capsule is torn extensively and the edges of the tear do not correspond exactly with the line of the fracture, Stimpson suggests that strong catgut sutures be passed through the ligamentum patellae and the quadriceps tendon, and carried in front of the fracture. A well padded posterior splint should be applied after the operation for about ten days to two weeks.

Finally, Fractures of the Os Calcis. Many of these fractures, especially the avulsion or transverse fractures, are exceedingly hard to reduce. Frequently a tenotomy of the

Achilles tendon is necessary because the deformity is an upward displacement maintained by the pull of the heel-cord. Cotton's treatment by impaction (as he calls it), consists of placing the internal lateral surface of the foot on a sand-bag and with a felt-pad held to protect the outer side of the os calcis, he impacts blows on the felt by a wooden mallet, until the fragments are driven into the proper position.

We have had occasion to use this method quite often with satisfactory results.

DISCUSSION

DR. WALTER S. NASH, Knoxville: I am very much pleased with Dr. Eve's paper. In fact, Dr. Eve writes just what he does. The things contained in his paper are just the epitome of his work. He is looking for results, just like the rest of us. He has a duty to perform that keeps railway surgeons in the forefront, but there is a great aggregation of men who are not aggressors. The man who is too aggressive in surgery lays himself open to criticism, whether to a just or unjust extent depends upon circumstances. Whether he is aggressive to a point where a jury of twelve men would call him meddlesome is a matter of great importance. The criticism has been made that railway surgeons are too conservative. I am now preparing a paper on the open operation on bones, and I may sooner or later be considered meddlesome. Dr. Eve said little about the open-bone operation. I hoped he would say more and hope others will express their opinion. There is an expression all the time from the public that is quietly endorsing more aggressive work in the field of open-bone surgery. I do not wish to be considered too aggressive or meddlesome, but if you will look at the end results that are walking around the railroad yards, or the streets, on crutches, it will be impressed upon you that we are by no means perfect in our bone surgery as relates to our casualties. The casualties that come from time to time are not the ones with the simple fracture or the simple broken finger, but the men who are mangled so that we cannot recognize them. They may be old friends and yet you have to ask the boys who they are, for you cannot recognize them because of their wounds. The open bone work has to come—we are getting too many bad results with the present methods.

Dr. Eve has recommended the open operation after the seventh day for the patella. He cannot always reduce his zygomatic process, so would he not do one there? Of course, he cannot always reduce and fix the shaft of the femur, and would he not do one there rather than have a walking

monument—not to his ignorance but to his fear that some one would say he was too aggressive? I take the position that there should be more aggression and more open work done in bone surgery, but it is not safe for anyone outside of a good hospital and who has not an antiseptic conscience to undertake it. It is not for the Crossroads Doctor or the one who is not eminently skillful to do this—he will have bad results and the profession will be criticised. There will be an avalanche of criticism placed upon us if these men do not have every opportunity for recovery and an A1 end result. I am not hard-hearted and I do not wish to seem opposed to the Crossroads Surgeon. I am just as much his friend as I am of the men who live in Chattanooga, Knoxville, Memphis, or Nashville, but those men have not the equipment to do this work and they are doing harm if they do not send the patients where they can receive proper treatment. I do not ask them to send the patient to me or to Dr. Eve or to Dr. Campbell, or to anyone in particular, but they should send him to someone who can do this work and give the man a 100 per cent end result. I have seen absolutely hopeless fractures of the shaft of the femur, of the fibula and of the tibia made 100 per cent by the open operation. I am for the open operation, other things being equal. The man should have the advantage of a good hospital, of a good corps of assistants, and then the open operation will give excellent end results.

I want to thank Dr. Eve for going over the fractures and I appreciated the paper most thoroughly. I can see Dr. Eve in every word of it. It is high class work, but I want to open the door to every man here to think of the open operation for the doubtful cases and the cases that will not yield to anesthesia and ordinary scientific coaptation. I admit that all Dr. Eve said about the ordinary fracture is undoubtedly true. Everything teaches us from time immemorial that it is true, but it is also true that today many bad results are walking the streets of Nashville because he did not have the courage to do the open operation.

DR. HENRY G. HILL, Memphis: I have enjoyed Dr. Eve's paper. His treatment of fractures coincides in a large degree with my ideas in treatment of such cases. I differ with Dr. Nash regarding the use of the open method as a routine in reduction of fractures of the long bones. Open treatment of fractures has been given a fair trial and end results do not warrant the routine use of this method. Primarily in a limited number of cases the open method is the method of choice. Fractures about the joint, with a free spicule of bone loose in the joint cavity; fractures of the olecranon and patella are as a rule best treated by the open method.

The fundamental principles underlying the

treatment of fractures, whether of the distal phalanx of the little finger or the hip joint, are well established and understood. Proper reduction, alignment and immobilization of the fragments until union has taken place, with a minimum amount of injury to the soft parts should be the surgeon's objective.

I was especially interested in Dr. Eve's abduction treatment of fractures around the head of the humerus. It is sane and sound. For several years I have treated practically all of my fractures of surgical and anatomical neck in this way. As a rule I use plaster-of-paris instead of airplane splint. The arm may be fixed in any degree of abduction, from the Statue of Liberty position to an acute angle with the body. With the arm in abduction, reduction is more easily accomplished and maintained. Such a position carries the line of fracture the greatest distance from the glenoid cavity, minimizes the danger of ankylosis. The position also facilitates subsequent x-ray examinations.

When a fracture cannot be reduced by the bloodless method, after an earnest attempt has been made with the aid of the present day armamentarium, we are justified in resorting to open method. Dr. Eve has brought out some practical points in connection with treatment of fractures of elbow joint. Fractures of the head of the radius, with a displaced fragment, usually require an open operation, consisting of the removal of the displaced fragment. We can expect good functional results following such a procedure. Fractures of the patella, as Dr. Eve stated, are best treated by open method.

DR. W. S. ANDERSON, Memphis: This is a very well written paper, logical and full of common sense.

There is one type of fracture I wish to emphasize and that is fracture of the elbow, especially in children. The treatment there, as proved by statistics, is the Jones treatment. Formerly we tried other types of treatment for these fractures but did not get results. By means of the Jones treatment we can take these fractures down early and begin massage of the elbow and in that way get excellent results.

DR. J. H. REVINGTON, Chattanooga: Dr. Eve's paper was very comprehensive and enjoyed. I would like to emphasize a few points on elbow fractures. I have been following Dr. Eve's suggestion made before the Southern Medical Association in Atlanta some few years ago; that is, acute flexion with a simple adhesive dressing. Practically all fractures of the elbow, except the olecranon in some cases, will retain reduction under this plan, and always give early motion and massage.

As to fractures of the femur, the question is, when is the proper time to reduce and apply fixation? If we think of the matter of physiology, we

know that a man in good health will have healing of the soft tissues in a few days and that our heavy muscles and fascia will take up shock very fast, and yet realizing this, many of us are too slow in fixing our fractures. We are trying this and that splint sold to us on the strength of a "spiel" by a good salesman. I believe the logical time to reduce fractures of the femur and fix them, regardless of the location, is at the time of injury, when the soft tissues are relaxed, due to trauma. In other words, do it at once instead of trying gradual traction. Of course, there are many cases where the patient is in shock, etc., that we must save life and disregard the fracture, but I was speaking of the average case. My point is early reduction on a Hawley table and fixation in plaster.

Dr. Eve did not sound his usual warning about x-rays in fractures, which I believe should be sounded whenever fractures are discussed. Never let x-ray men discourage you into tearing down good reductions in an endeavor to get better ones. If we have good alignment and good length with a fair shoulder of bone catching, let it alone, because if you try to get them x-ray perfect you will more often get them in worse shape and as a result, a case which would have gotten a good functional result will have a poor one. X-rays are indispensable, but at the same time are very misleading to the unskilled surgeon.

There is one thing I would like to mention that applies to all fractures, physiotherapy. In many cases a great saving of percentage of loss can be had by its consistent use. I do not mean to tell the patient to go home and soak the limb in hot water, for he will not do it properly. This very thing is what sends them to our cults of lesser learning. It is up to you surgical men to see that these cases get their treatment in your own offices under your direct supervision. The whole period of treatment may be longer but the final results will surely be gratifying and well worth while and bring on an economic saving to society through good function.

DR. L. M. WOODSON, Gallatin: I wish to call attention to one fracture and that is Colles's or fracture of wrist. I have had some bad results follow what I thought perfect reduction. Dr. P. S. Conner of Cincinnati was the first one to call attention to the fact that, if we had a perfect reduction of fracture it would require very little splinting to hold it. He used anterior and posterior splints from elbow to lower end of ulna and

radius or wrist joint, with wrist joint functioning all right. We treat ours with anterior and posterior splints but extend to base of carpo metacarpal joint and at end of four or five days cut it shorter and by the end of ten or twelve days we have it off at the wrist joint. By this method we have no ankylosed joints. The late war has taught us not to confine our fractures too long but to begin passive motion early. We have a case now where the arm was kept in long splints for six weeks and, we are having great difficulty in re-establishing normal motion in the affected joints. By the use of massaging, high frequency currents, and hot water this can be done.

DR. DUNCAN EVE, Nashville (closing): I am going to jump on Dr. Woodson a little, although he is one of my good surgeons. I think the matter of reduction of a Colles' fracture is, just as he states, most important, but if you do not have firm immobilization, you are going to lose that reduction, no matter by what plan it is reduced. A fracture after the swelling has been reduced has not the tendency to maintain abduction because the swelling helps to maintain it. After reduction we must rely on immobilization. I agree that the principal point is reduction and we know of no better plan than that suggested by Dr. Levis of Philadelphia. There are other plans; for instance, Dr. Will Mayo does not use the plan I am going to suggest. I have never seen a case of Colles's fracture to which this method was not applicable; namely, to increase the deformity by hyper-flexing the wrist, then extension on the hand, and finally forced flexion. If this is not applied soon after the fracture we will have some trouble with the reduction. It will not be forced easily even under anesthesia. Chloroform is the most relaxing anesthetic but most of us are afraid to use it. I think there is not much danger if it is used in a recumbent position. If you relax the patient you will have no trouble in reducing the fracture and you will find that after you have reduced it, with the patient still under the anesthetic, there is no strain at all in any position you wish to place it. If you have made the reduction the thing to do is to immobilize that hand, and the point I make is that I have never seen a case that did not need immobilization. I am afraid not to immobilize, but not longer than two and a half or three weeks. I have a leather splint which I call my "convalescent splint" which I use the last week and have the patient come up every few days to see how he is getting along.

A REVIEW OF ONE HUNDRED CONSECUTIVE CASES OF APPENDICITIS OPERATED DURING THE PAST YEAR*

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THE title of this review is explanatory in itself. The number (one hundred cases) is chosen because the percentage and averages are more easily worked out and this number corresponds approximately to a year's time, and are the last cases that have come under our care. They were all operated at the Baird-Brewer Hospital by myself or by my brother, Dr. J. P. Baird.

In this series all cases are excluded which came in with two or more organs involved. All cases in which there was involvement of the gall-bladder and appendix are excluded. Cases in which the appendix was removed in the course of pelvic operations are not included in many of these cases, the appendix presented pathology enough to justify removal.

This brings on more discussion as to why a paper on appendicitis. Has not the subject in the past been brow beaten, discussed, cussed and settled for all time? It has been extensively discussed but in view of these findings, it is not settled. Ask any general surgeon where a nice percentage of his business comes from and he will tell you that the appendix is still the surgeon's most frequent visitor. How about the death rate gentlemen? Has this been lowered in frequent years? If not, why not?

We will all admit that this disease occurs with great frequency. The pathology shown at operation, demonstrates the severity of the lesion. In neglected cases the death rate is still too high, in fact higher almost than in any other intraabdominal lesion. So let us dissect carefully the history and findings in this series of cases and

see if we can learn anything that will be to our advantage and primarily to the advantage of those whom we serve.

A careful review of these cases was made with reference to the following points: Residence and doctor referring cases; the age incidence; the sex; as to complications; as to the prominent and outstanding symptoms, and as to whether a purgative had been administered; the leucocyte count; the presence or absence of fever; the number of attacks; the pathology shown at operation; whether drainage was used; the incision made; the duration of present attack; the length of stay in the hospital; recovery or death, and cause of death; complications and atypical or unusual cases.

The cases occurred in the territory adjacent to Dyersburg. All the cases were referred by general practitioners except four; these came in of their own volition. Forty-one doctors referred the cases. The findings therefore may be considered absolutely typical of this portion of Tennessee. As the review may show some rather startling facts, I want to say right here that the referring doctors will compare favorably with any other forty-one doctors chosen from a similar territory.

Age: The youngest case operated upon was five years of age; the oldest was seventy.

Fourteen cases occurred below the age of ten.

Thirty-five cases from ten to twelve.

Twenty-seven cases from twenty to thirty.

Sixteen cases from thirty to forty.

Three cases from forty to fifty.

Three cases from fifty to sixty.

*Read before the Tennessee State Medical Association, Memphis, May 11, 12, 13, 1926.

Two cases from sixty to seventy.

Going outside this series I might say that the youngest case that we have on our records is a baby fifteen months old with an appendiceal abscess. Prompt recovery followed drainage in this case.

The tabulation shows that appendicitis occurs with greater frequency in childhood and young adult life; forty-nine per cent occurring under twenty years of age, and seventy-six per cent under thirty years of age. The cases were about evenly divided as to sex. There were fifty-six males and forty-four females. All our past records show a slight predominance of males.

Complicating Diseases: No special emphasis can be placed on previous diseases, as only ten per cent of the cases gave a history of any other diseases that could possibly have had any bearing on the case. In two of these the patients were in bed undergoing rest and full feeding for pulmonary tuberculosis. Whether these attacks were due to T. B. or full feeding with lack of exercise, I am unable to say. The pathology and end results proved that the diagnosis was correct and the operation necessary. Both of these patients are living and well at the present time. Three cases gave a history of recent "flu" and pneumonia, two of pneumonia, two of measles, two had had enteritis, and one typhoid.

In discussing anything that might have a bearing on the etiology of appendicitis, I might mention the increased amount of lymphoid tissue in the appendix, especially in children, and the known lowered resistance to infections of this tissue. Anatomical displacements, malformations, bands and kinks, all tend to produce hyperaemia, and a fertile field for pyogenic localization. Digestive disturbances, irregular eating and gorging the stomach with the various indigestibles found in the present day menus, very frequently precede and undoubtedly are an influence in bringing on an acute attack or chronic irritation of the appendix.

We are frequently asked by the layman to explain why it is that appendicitis is so much more common now than in years ago. Of course we know and explain that it was

not recognized and diagnosed. In many cases "Ignorance was bliss" to them, while in many others "Ignorance was death."

In our contributing territory it seems that the virulent infections are more prevalent and widespread than in any other locations in which it has been our privilege to practice. This may be due to the lower altitude, warmer more moist climate and lowered resistance due to a subacute malarial condition, or it may be due to the fact that these local spots of infection in the body are not properly cleaned up and kept clean. But we are reasonably certain, from close observation and tabulation of cases, that in proportion to population in certain districts there is decidedly a higher percentage of appendicular infections than in others. The prevalence of vegetable diet in some localities has been mentioned as lessening the predisposing causes. However this does not mean that a diet of prepared breakfast foods will cure appendicitis, as is asserted in advertising literature.

APPENDICITIS IN COLORED RACE

Two patients in this series were colored. One a distinct and uncomplicated acute recurrent case. The second a gangrenous perforative case. The percentage of appendicitis is extremely low in the colored race as compared to the white, but they are not entirely immune.

PATHOLOGY

In this series, sixty-five cases were listed as clean cases. This includes three interval operation cases, eleven listed as sub-acute and fifty-one acute. The pathology shows that in thirty-five cases there was gangrenous perforation of the appendix, with different degrees of peritonitis present, ranging from mild peritonitis where it would be unsafe to leave case without some drainage, to appendiceal abscess or diffuse general peritonitis. Attention is called to this extremely high percentage of cases with perforation (thirty-five per cent). These will be mentioned farther on in this discussion.

NUMBER OF ATTACKS

In thirty-four per cent, there was no history of a previous attack. In sixty-six per

cent there had been from one to six previous attacks, ranging in severity from mild recurrent attacks of pain to distinct, severe, and definite localization of trouble with fever and vomiting.

In thirty-four cases listed as primary attacks, pathology shows in six cases there were adhesions present and chronic inflammatory changes denoting previous trouble at this point. Of the remaining twenty-eight, fifteen cases were of the gangrenous perforative type and required drainage. This leaves thirteen cases in the series with a clean record. From these findings one can almost agree with the statement that it is extremely hard to find an appendix that is normal. Certainly no one has discovered any use to the human mechanism for its existence.

Time of year: No special grouping of cases occurred in any one month.

PURGATIVE GIVEN

Notation on history taken, states in nineteen cases bowels were open and the duration of attack lasted from one to six days. This means that in the majority of these cases, either the patients themselves took a laxative previous to calling the physician, or a laxative was given by the physician after seeing the case.

In forty-eight cases the history shows that bowels were opened by oil or other laxative administered by patients themselves or attending physician. In sixteen cases opiate was given or notation made that bowels were not moved. In eight cases bowels were moved by enema. Bowels were either open or laxative given in sixty-seven per cent of cases. Eight per cent had enemas given, and in sixteen per cent opiate was given or notation made that laxative was not given. No definite history in remainder.

I think no comment is necessary along this line; we all know laxatives are not indicated in appendicitis but the figures and percentages show that some one has erred along this line. Also just a word of caution here as to the use of enemas. No case in this series happened to this accident, but we have had six cases enter hospital with

the contents of the enema can in the abdominal cavity, having penetrated through the perforation and in three of the cases, through appendiceal abscess. This we will agree is no way to wash out the peritoneal cavity. If it must be done, the better way is through an incision and tube and then the favorite solution; whether it be Dakins solution, iodine, ether, or mercurichrome, can be administered to better advantage.

In giving enemas, do not use too much solution and do not use any force. In other words hold the bag almost on a level with colon.

FEVER

In fourteen per cent the temperature on entrance to hospital was 98.4 or under; in ten per cent temperature was 98.4 to ninety-nine; in thirty-seven per cent temperature was ninety-nine to 100; in fourteen per cent temperature was 100 to 101, in twelve per cent temperature was 101 to 102; in thirteen per cent temperature was 102 or over. Thus you have sixty-one per cent of cases with temperature registering from sub-normal to 100.

Of these cases registering sub-normal to 100 temperature, there were eighteen or fifty-one per cent who had gangrenous perforative appendicitis with peritonitis or abscess formation. Who will wait long for a rise in temperature in appendicitis, when sixty-one per cent show temperature from sub-normal to 100, fifty-one per cent of which are gangrenous ruptured cases?

LEUCOCYTE COUNT

The white cell count in these cases varied from 6,000 to 34,000 with one exception, a sub-acute case with count of 4,200. A diagnosis should be made in the history and physical findings, and if the blood count is considered as confirmatory of diagnosis and not relied upon to determine whether operation is necessary or not, it will be of benefit, otherwise it will do harm. Some of the most serious cases of appendicitis that have come under my care have had very low leucocyte count.

In serious cases a low count may be a sign of great danger.

ATYPICAL CASES

In reviewing these cases I find a number of cases with atypical signs and symptoms. Among these cases are those with no vomiting and in some instances only slight nausea if any.

One case illustrates the tendency to look for something unusual: Case No. 6321 gave the history of having been struck by a plough handle in the right side of abdomen. Has complained of tenderness and pain in side since that time; for past week pain has been much worse and associated with vomiting and fever. Pathology in this case showed a gangrenous perforation of the appendix with diffuse peritonitis. Patient died the tenth day with obstructive peritonitis.

The blow in the lower abdomen might or might not have had something to do with the beginning of this attack of appendicitis. It probably did not. Patients, parents and physicians alike are too prone to look for something else besides appendicitis when these disturbances arise in the lower right abdomen. Evidently in this particular case too much importance was attached to the history of a blow and not enough to the cramps in the lower abdomen and vomiting accompanied by fever.

SARCOMA—UNUSUAL CASES

One unusual case, No. 5945. Sarcoma of appendix in boy 14 years of age. Parents living. Whooping cough and diphtheria when a child. No other serious illness since, but has not had good health since diphtheria.

Patient's illness began two days ago with cramps in lower abdomen, vomiting and fever, rigidity and distention in lower abdomen. Attack has been continuous with no relief of symptoms. No history of previous attack of similar character.

Operating room findings: Appendix enlarged and hard, four inches in circumference and five inches tip to base. Gangrenous on inside and leakage of infection towards base, some adhesions and local peritonitis.

Appendectomy by purse string method: There was probably nearly one-half inch of

appendix at base that was nearly normal in size. Small tube drainage. Laboratory findings, white count 32,600. Tissue examination of appendix, a hard fibrous mass measuring eighteen c.m. tip to tip and at largest diameter filled with necrotic material. Microscopic examination, small round cell, fibro-sarcoma.

This boy made an uneventful recovery and recent communication from his doctor says he has been in good health since, with no signs of recurrence of trouble.

DIAGNOSIS—CASE No. 6427

Age 25, male. For two days pain and cramps in lower abdomen. Vomiting, slight fever. Operation disclosed appendix strutting, gangrenous mucus lining, but no perforation as yet. It certainly gives the surgeon and the attending physician a feeling of pride and contentment to know that by prompt diagnosis and prompt operation these cases are saved the additional risk to life and given a more prompt recovery at less expense by the simple process of prompt diagnosis and operation.

We all realize, especially in country and small town practice, that the diagnosis is not all. Many times your problem has only begun; relatives have to be convinced, finances considered, and in all these considerations the attending physician usually occupies a prominent place.

But I ask you, gentlemen, is not the death rate too high? Is it fair to the patient or to the surgeon, in referring cases to him, to find thirty-five per cent with gangrenous perforation? In fairness to all, I will say that in fully twenty-five per cent of gangrenous cases perforation had taken place before the parents or relatives saw fit to consult a doctor.

I also recognize that the histories of these cases show in many instances a departure from the orthodox pain and cramps in the lower abdomen, nausea or vomiting, fever, rigidity of muscles and leucocytosis. Some cases begin with a chill. In others the pain or localization does not appear for two or three days. Others have a low leucocyte count; fever sometimes is not present at the time of examination. Nausea or vomiting

is absent. But in these cases there are sufficient physical findings present to warrant a tentative diagnosis before the appendix is leaking and a progressing peritonitis has developed.

TOTAL DAYS SPENT IN HOSPITAL

Clean cases, sixty-four living, spent 546 days. Gangrenous cases (twenty-nine who lived) spent 397 days in hospital. An average of eight and one-third days in clean cases and an average of thirteen and two-thirds days in gangrenous cases.

In this series (out of fifty-one clean acute cases) twenty-three or forty-five per cent were ready for whatever treatment was necessary in twenty-four hours.

Fifteen cases were in the hospital during the second day, nine cases on the third day, eighteen on the fourth day or later. In the gangrenous cases *none* were operated by the end of the first day, five in two days, twelve in three days, eighteen in four days or later.

To my mind these figures show an unnecessary delay in operation. Forty-five per cent of clean cases were operated in the first twenty-four hours, none of gangrenous cases in twenty-four hours. Approximately thirty per cent of clean cases operated second day and fifteen per cent of gangrenous. Sixteen per cent of clean cases third day and thirty-one per cent of gangrenous. Four days and over, clean cases nine per cent. In this percentage fourteen sub-acute and interval operations were not figured. Eighteen gangrenous cases or fifty per cent were placed in the hospital four days or more too late. And all of these had some degree of peritonitis present.

Pain or tenderness at or near McBurney's point is practically universal. In fact it occurred in all of the cases in this series some time during the attack. We have rigidity of the muscles varying in degree.

MORTALITY

Total death rate was eight per cent. This included one case, however, that died about five week after operation, at home, from the results of the peritonitis or general septicæmia.

There was only one death in this series

in the cases operated before perforation. This death occurred within three days following operation, due to edema of lungs. I remember no other death in recent years in a case listed as clean.

In gangrenous perforative cases there were seven deaths. One, however, occurring at home three weeks after dismissal from hospital. Of the other six cases, one patient, forty-seven years old, lived twenty-one days, and died from general septic and exhausted condition of the body, septic bronchial pneumonia; one, twelve years old, died from paralytic ileus, peritonitis, twelve days, post-operative. Third, a child five years old died from peritonitis, lived one day. Fourth, boy thirteen years old, died six hours after operation, appendectomy and drainage under local anaesthesia and morphine. Fifth, age eight years, died in thirty-six hours from general peritonitis. Sixth, age seventy years, appendectomy under local anaesthesia, lived three days, paralytic ileus, enterostomy, death.

No death occurred when diagnosis was made and operation performed during the first twenty-four hours of attack.

TREATMENT

The gridiron incision was made in sixty-four cases, right rectus in thirty-three, and median in three.

While these cases are of recent occurrence no hernia occurred in any of these cases and fecal fistulas healed promptly, none persisting longer than three or four weeks, usually one or two weeks. Some referring physicians have been alarmed when they knew a case had foecal fistula. It has been my experience that a foecal fistula in these bad cases is a benefit and not a detriment to the patient. They usually occur in two to four days, just when the patient is suffering most from extreme meteorism and threatened paralytic ileus. I believe it helps relieve these distressing cases. Drainage sinus is established by that time and there is little additional absorption from the contents of the bowels. They heal promptly when distention is relieved, and no attempt to repair them should be undertaken until a full year has passed.

The appendix is removed in practically all cases; if left in position the patient will surely return for future operation. One doctor having come under our care had been drained *only* for appendiceal abscess on three different occasions. In time this grows monotonous.

However, if appendix is not reasonably accessible and the two or three additional minutes required for taking off the appendix is detrimental to the patient, it can be left *in situ* and removed at some future date. When the appendix is large, swollen and gangrenous, and it would be difficult to invert stump, a short double catgut tied around base and mesentery to avoid bleeding, and no attempt made to invert stump, only takes an additional thirty seconds and will save your patient a secondary operation. Drainage tube is always placed at caput coli and in general peritonitis diffuse, a soft tube is usually placed towards left pelvis. All tubes are removed at the earliest moment, this time being governed by pulse and temperature and localization of peritonitis and sinus formation. From two to four days will suffice in most cases.

Wounds are strapped tightly with adhesive around tubes, and what is more important, muscles are kept pulled closely together all through convalescence. Except in fat persons and sometimes in the right rectus incisions, stab drainage is not used, as the gridiron incision is practically and for all intents and purposes a stab wound.

Time on operating room table counts in these cases and all unnecessary delays and operative procedures should be eliminated.

Aftercare and treatment in these cases is important and consists of placing the patient in the right face position. Head and shoulders are elevated, patient lying on right side and face. Ice bag to abdomen, soda or citro-carbonate of soda drip, one quart every four hours and small doses of strychnine for the general tonic effect, especially to the muscle fibres of the gut and bladder. Morphine is always given before operation and morphine sufficient to keep the patient perfectly comfortable afterwards. If the constant use of drip and

strychnine does not produce bladder action and return of gas and water from bowel within reasonable time, and if the gas distention is over severe, I use 1/100 grains of physostigmine or eserine in children and 1/50 grain in adults, followed in twenty minutes with low enema; this usually produces results.

In case of severe vomiting, gastric lavage with soda solution. Camphorated oil in large doses and pituitrin are used in some cases.

CONCLUSION

In conclusion I repeat: when there are cramps in the lower abdomen anywhere from the umbilicus extending upward or to the right or downward, accompanied by slight nausea or vomiting, with any fraction of a degree of fever or even sub-normal temperature, do not give a purgative or allow it to be given. Use ice bag and see the case in two hours again. If there is a history of previous disturbances in this locality you may be reasonably sure of appendicitis. Tenderness or rigidity is always present.

Place your case in the hospital for observation or operation. By the time you have reached the hospital the case will probably have a very definite set of signs and symptoms, and with the aid of the laboratory and surgical consultant the proper procedure can be agreed upon, and more than that, you will find the percentage of gangrenous perforative appendicitis cases reduced.

Do not administer a heavy opiate or purgative and leave case with instructions to call you the next day if patient is not better. Many a case has gone to perforation while the parents or relatives were deciding whether case was better or worse.

SUMMARY

In summing up the present situation in appendicitis, I have nothing new to propose. The slogan, "Early Diagnosis with Prompt Operation," expresses the whole matter in a nutshell. The signs and symptoms are classical enough, if followed by prompt action, to prevent thirty-five per cent of cases going to perforation.

After patient has consented to go to hospital use morphine. See that case goes to hospital immediately or put the responsibility for delay where it belongs. Do not give large doses of morphine and say, "If you are not better by tomorrow you may be compelled to go to hospital," or "I don't know whether I can get you through this

attack or not, I will do what I can for you."

A majority of cases will accept your advice during the first twenty-four hours if you tell them there is no medical treatment for appendicitis and properly put the dangers of the case before them. By so doing you will save many lives and much unnecessary expense and suffering.

ART AS APPLIED TO MEDICINE*

HARRY C. SCHMEISSER, A.B., M.D., Ph.D., and JOSEPH L. SCIANNI, Artist, Memphis, Tennessee

(From the Art Department, Pathological Institute, University of Tennessee College of Medicine).

ART as applied to medicine, in the broad sense, include (a) the mechanical method of photography, both gross and micro, in tone and color, still and motion, with and without the x-ray; (b) the non-mechanical method known as "freehand," and (c) a combination of both.

Photography may be used to advantage when a large area is to be reproduced with a saving of time and cost or when motion is to be recorded. Being a mechanical procedure, its application is limited. The camera can record only what lies exposed to view—no more and no less. Detail under the most favorable lighting is difficult to get. By means of the x-ray, the camera can penetrate below an opaque surface, but even then it will record only varying degrees of density, and detail will be lacking.

Freehand art has a greater application and less limitation than photography in medicine. It is carried out in either one, or combination of the two methods employed in the fine arts, namely, (a) plastic, (b) graphic representations.

By plastic representation is meant the figuration of anatomic form, apparatus, in-

struments, etc., by the use of a plastic medium such as clay which gives actual solidity when modeled. Plastic representation is used in reconstruction work, as in embryo reconstruction and reconstruction of the ventricular system of the brain, and in actual representation of normal and abnormal anatomical parts and skin lesions in the nature of casts. Dr. Vladimir Fortunato, of the Brady Urological Institute, Johns Hopkins Hospital, is a leader in this field.

By graphic representation is meant the figuration of anatomic forms, apparatus, instruments, etc., by the use of a writing or painting medium. Graphic representation has a wider application in medicine than plastic. It may be employed in any one of the three major types of illustrations, namely, (a) schematic, (b) realistic, (c) idealistic illustrations.

The purely schematic illustration is one which attempts to show, grossly or microscopically, in outline the main characteristics of one or more parts of a medical subject, apparatus, etc. Yet, at times the schematic illustration may infringe upon the realistic or idealistic type. It finds application in topographic diagrams, normal or abnormal, of one or more parts of the body, (Fig. 1); in diagrams of one or more related parts not easily dissected or studied in toto, e.g., ventricular system of the brain

*Read before the Tennessee State Medical Association, Ninety-third Annual Meeting, Memphis, Tennessee, May 11-13, 1926.

(Fig. 2); in physiological charts showing function of parts and physiological principles, e.g., autonomic system; in operative procedures, etc.

A realistic illustration is one which attempts to picture, grossly or microscopically, true to nature a part in all its details just as it is found in the particular medical subject, apparatus, etc. It is employed in normal anatomy, and especially in pathology in representing lesions from life; anatomical specimens in situ at operation; anatomical specimens in situ at autopsy; anatomical specimens after removal from body (Fig. 3); operative procedures, etc.

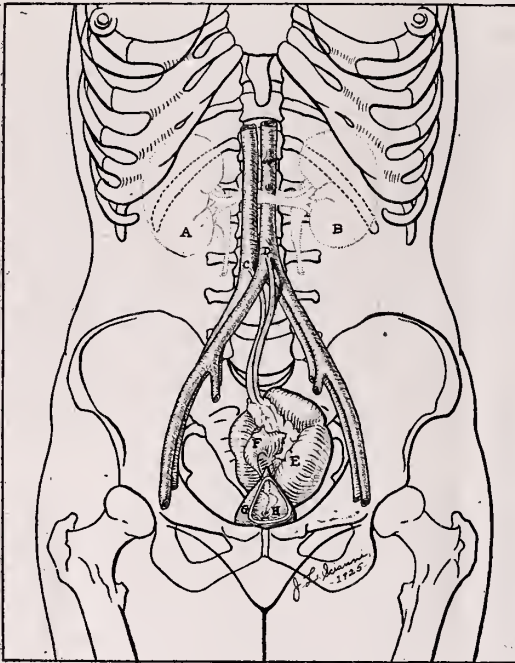


Fig. 1

An idealistic illustration is one which attempts to represent, grossly or microscopically, the invariably normal or typically pathological anatomy. It is frequently a composite, idealized representation worked up from a number of individuals. It finds application in normal anatomy and typically pathological lesions. (Fig. 4).

Medical illustrations may be rendered in any one or combination of the three common, graphic techniques, namely, (a) line, (b) tone, (c) color.

Line technique is that mode of graphic

representation in which markings such as the point and the path of a point are employed to express the contour and plasticity of an object and its component parts. This technique is best suited to schematic illustrations in which tissue texture is not not essential. (Fig. 1).

Tone technique is that mode of graphic representation in which gradations of gray corresponding to the quantity of light upon an object between the extremes of white and black are employed in modeling to express plasticity of the object and its component parts. This technique is best suited to realistic and idealistic illustrations in

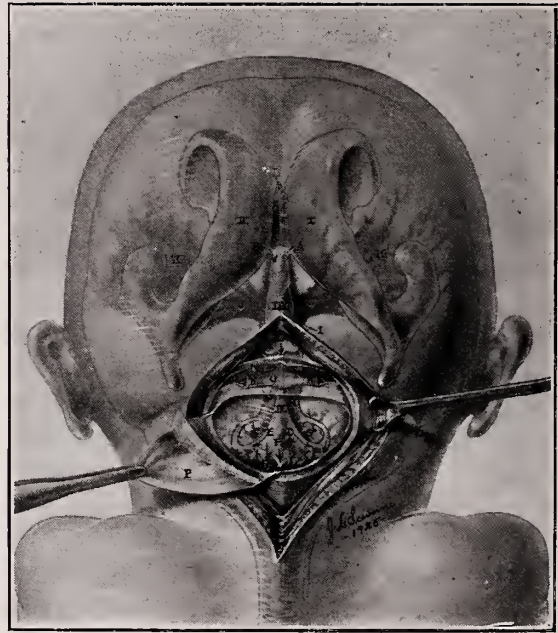


Fig. 2

which great detail is desired. (Fig. 2, 3, and 4).

Color technique is that mode of graphic representation in which all color tones, corresponding to first, quantity of light; second, quality of light, i. e., the color; and, third, degree of color-intensity upon the object, are employed in modeling to express in color value the plasticity of the object and its component parts. This technique is best suited to realistic and idealistic illustrations in which color reproduction is essential and which cannot be represented in line or tone technique, as in certain skin

lesions and certain pathological specimens. Flat colors may be employed in charts, diagrams, etc.

Although it is essential that the artist should understand thoroughly the principle of light and shade of spheres of different density and of a concavity, these need not be discussed in this paper.

In working up an illustration, the artist should have a conference with the party for whom he is to illustrate, preferably in the presence of the object to be illustrated and thoroughly master the problem. Hours, sometimes days of study are necessary for

and the general contour and location of the lesion, but for detail a graphic insert is advisable, (Fig. 5). Fourth, lantern slides are made of the graphic illustrations and by projecting the same a large audience may inspect them.

It is evident from what has been said that the necessary qualifications of a successful medical illustrator are, first, sufficient training in photography, although he need not practice the same, to know its application and limitations to medicine; second, a thorough understanding of the principles of art



Fig. 3



Fig. 4

him to visualize the illustration or illustrations best suited to the problem on hand. The aim of the artist should be, as so faithfully taught by Professor Max Froedel, Director of the School of Medical Art at the Johns Hopkins University, namely, union of scientific truth and detail with artistic beauty.

Photography and graphic representation may be combined to advantage in medical art in several different ways. First, the gross, micro., or x-ray negatives and the prints of the same may be retouched, a practice not to be recommended, but which may be resorted to as long as morphology is not changed. Second, graphic illustrations may be interpolated in the making of a motion picture reel. Third, a graphic illustration may be superimposed on a photograph. The latter suffices to record normal landmarks

and a feeling for beauty; third, he must possess a working knowledge of the fundamental sciences of medicine, i. e., normal anatomy, histology, embryology, physiology; and pathological anatomy, histology and physiology. He must also know something of the principles of medicine and surgery; fourth, he must have a sympathetic attitude towards art and science.

The art department is best housed in an institutional organization devoted to the study of medical problems so that the artist may have easy access to the personnel and equipment of all the medical departments, both fundamental and clinical.

The medical illustrator should always keep in mind the words of the illustrious Michael Angelo, the greatest artist of all times, "Trifles make perfection, but perfection is no trifle."

EXPLANATION OF FIGURES

Fig. 1. Schematic illustration, rendered in line technique. Solitary ectopic kidney in situ at operation. Outline of body and skeleton. (A and B) Right and left kidney with renal artery, vein, pelvis and ureter shown in natural size, outline, position and attachment. (E) Kidney in pelvis lying on anterior surface of the sacrum. (F) Dilated pelvis and tortuous ureter entering fetal bladder (G) at orifice (H). (D) Renal artery leaving aorta at bifurcation. (C) Renal vein entering inferior vena cava at bifurcation. Illustrated for Hennessey, R. A., Memphis, Tenn.

Fig. 2. Schematic illustration rendered in tone technique. Ventricular system of the brain and the essential subarachnoid spaces viewed through the back of the head. (I and II) Right and left lateral ventricle. (A and B) Right and left foramina of Monroe. (III) Third ventricle. (C) Aqueduct of Sylvius. (IV) Fourth ventricle. (D and E) Right and left foramina of Luschka. (F) Foramen of Magendie. (G, G', G'' and G''') Cisterna magna (cerebello-medullaris). (H) Cisterna pontis. (I) Cisterna interpeduncularis. (J and J') Cisterna chiasmatis. (K and K') Left and right lateral cerebro-cortical channels. (L) cerebro-sagittal channel. (M) Superior sagittal sinus entering (N and N') left and right transverse sinuses. (O) Rupture of straight sinus or at junction of straight, superior sagittal and transverse sinuses resulting in a subtentorial hemorrhage. (P) Dura mater deflected from the cerebellum. Illustrated for Jacobs, A.G., "Hydrocephalus Following Intracranial Hemorrhage," J. South. M. Ass., 1926, XIX, 669.

Fig. 3. Realistic illustration rendered in tone technique. Teratoma (solid) of right ovary with large spindle cell sarcomatous metamorphosis on section. (a) Small piece of outer membrane. (b) Cysts projecting from outer surface. (c) Soft, friable tissue not limited by membrane. (d) Fat tissue. (e) Cartilage. (f) Bone. (g) Bits of scalp with hair buried in sebaceous material. (h) Delicate black membrane resembling choroid of eye. (i) Embryonic

teeth. (j) Small cyst on section lined with smooth and glistening membrane and containing serous or pseudomucinous material. Illustrated for Black, W. T. "Solid Teratoma of the Ovary, Report of Two Cases." Am. J. Obst. and Gynec., 1925, X, 345.

Fig. 4. Idealistic microillustration, rendered in tone technique. Characteristic cellular elements seen in biopsy from experimentally transmitted case of granuloma inguinale, as shown in Fig. 5. (a) Swollen, large, monoclear leucocytes containing Donovan bodies in compact groups and scattered. (b and b') Swollen endothelial cells of capillary walls compressing red



Fig. 5

blood cells in lumina. (c) Endothelial cell of capillary wall undergoing mitosis. Illustrated for McIntosh, J.A., "A Study of the Etiology of Granuloma Inguinale," J. Tm. M. Tss., 1926, LXXXVII, 996.

Fig. 5. Graphic illustration superimposed on a photograph. Experimentally transmitted case of granuloma inguinale, "S". (T) Lesion in the right inguinal region shown in greater detail in insert. (B) Patient also had a right and left inguinal hernia. Illustrated for McIntosh, Ibid.

DISCUSSION

DR. E. R. ZEMP, Knoxville: There is not only a field for it, but a very urgent need for it. I believe that all the doctor has to do is to let the physicians and surgeons know that there is such

an institute or department within their reach, and he will be overrun with work.

Take this lecture today as an illustration. The idea is imparted to us more clearly, stronger, more precisely than if he had read a paper of one or two hours. You grasp it in a minute. It is detailed. It is just before you. You can't understand it or misinterpret it if you have good eyesight.

There is nothing that will bring home a fact to you more strongly and fix it more clearly in your mind than just such illustrations as these.

I say I believe there is an urgent need for it not only for the physicians who write these papers, but for those who have to suffer and listen to them.

DR. E. R. ZEMP, Knoxville (President): I guess there is no man whose soul is so dead that he would not appreciate this compliment. I deeply appreciate it.

They tell me it is purely an ornamental posi-

tion, and as such I hope to preside in a manner that will satisfy even Dr. Schmeisser, that is, with scientific beauty and artistic detail.

DR. JOSEPH SMITH, Memphis: Dr. Schmeisser gets up there and tells what he knows about medical art in such an off-hand way and such a precise, unhesitating manner that it seems to us not experienced in this kind of work that it is an easy art.

I want to tell you that the Pathological Institute in Memphis is doing work which I do not believe can be touched by any other place in the country. They are to be congratulated on the progress they have made. Their artist is to be congratulated on his fine work. There is no doubt that the touching up, painting up of the pictures that look so much like a photograph is incomparable.

I think that the paper is so much out of the field of ordinary surgeons and doctors, I am not surprised there is not some discussion on it.

POINTS FOR CONSIDERATION IN SURGERY OF THE LARGE INTESTINE*

BENJAMIN I. HARRISON, B.S., M.S., M.D., F.A.C.S., Knoxville, Tenn.

A BRIEF consideration of the development of the alimentary canal recalls the fact that the canal is developed from the fore-, mid- and hindguts. The foregut receives and prepares the food, the midgut digests and absorbs it, the hindgut accumulates and expels the waste. The duty of the midgut, which begins at the duodenum and terminates approximately at the middle of the transverse colon, is to eat and drink. The function of eating is performed by that portion of the midgut, which becomes the small intestine, while that portion which becomes the large intestine takes up the fluid. Thus, hunger is satisfied by the small intestine and thirst by the large intestine.

The retention of water throughout the whole length of the small intestine is essential, not only to facilitate the transit of the solid particles held in suspension, but also to afford the valvular flaps of the mucous

membrane projecting into the lumen of the small intestine an opportunity to readily absorb the food. If most of the liquids were absorbed in the stomach or jejunum the passage of the dry material through the lower coils of the ileum would be difficult and slow. However, the contents which reach the caecum are fluid and waste products. Ninety per cent of the liquids remain to be taken up by the caecum and ascending colon. Thus, the function of the small and large intestines widely differ, so much that the two parts may be almost considered as separate organs.

The ileo-caecal valve separating the small and large intestines is a sphincter consisting of a heavy band of muscle tissue and two membranous flaps that do not completely close. This may be demonstrated by the fact that the contents from the caecum may be forced with ease into the ileum. The ileo-caecal valve does, however, impede the progress of the contents of the ileum so that the latter can only advance into the

*Read before the Knox County Medical Society.

caecum in large masses and under a certain increase in pressure.

The large intestine may be divided into four parts: The caecum, ascending colon, transverse colon, and descending colon. The movements of the large intestine are similar to those of the small intestine, namely, peristaltic and pendular motions; the latter, however, in the large intestine are of little importance, whereas the antiperistaltic movements are even more prominent than the peristaltic. The large intestine is more quiescent than the small intestine.

The intestinal contents are carried from the caecum towards the hepatic flexure, where they are thrown back into the caecum by anti-peristaltic. These back and forth movements continue until the greater portion of the water is absorbed. The contents then gradually pass in a semi-solid state into the transverse colon, where they are held, to be finally forced through the descending colon into the rectum by strong peristaltic waves.

The outstanding diseases of the large intestine for surgical consideration are: malignancy, tubercular tumors, and diverticulitis. In the scope of this paper it is intended only to consider malignant tumors and to make mention of the difficulty in differentiating at times diverticulitis.

From a technical standpoint marked strides have been made in this field of surgery. Conditions of the large intestine calling for surgical intervention can be handled with a high degree of permanent success.

Carcinoma of the large intestine is to be considered among the least virulent of malignant growths for the development of the tumor is slow and the invasion of the lymphatic area appears to be at times delayed.

The outstanding problem is to discover the early symptoms of this disease, that it may be interrupted at a time when surgical measures offer prospects of success. The terminal events, intestinal obstruction or the discovery of a tumor are too often the first indication that suggests surgical treatment.

The symptoms presented by a tumor in the intestine depend to a great degree upon that portion of the intestine involved. If a growth arises in the caecum or ascending colon, and a slight narrowing of the lumen of the bowel develops, an increased intestinal activity proximal to the growth forces the fluid contents with more rapidity into the descending colon for evacuation.

With few exceptions tumors in the caecum or ascending colon have diarrhea as an outstanding intestinal irregularity, whereas, if the tumor is in the descending colon, constipation generally results.

There are exceptions, but as a rule very few cases with a growth on the right side of the colon have progressive constipation and perhaps less on the left side of the colon have true diarrhea.

Pain is a rare complaint with patients suffering from a growth in the large intestine. There is, however, usually a sensation of discomfort with perhaps slight griping, accompanied by a sensation of gas and fluid being churned about in the bowel. The gurgling, in cases that have been developed to incomplete obstruction, may be very loud, so much so that the patient may even call attention to this symptom and its apparent location.

Much mucous is often evacuated either with or independent of the stools. At times a free passage of blood is the first indication of a malignant growth. Such hemorrhage is frequently passed either in large amounts seen by the unaided eye, or in smaller amounts detected by chemical tests. When present it is an important link in the diagnosis. Bleeding of microscopical amounts rarely occurs in diverticulitis.

In cases of carcinoma of the caecum, ascending colon, and transverse colon a profound anemia may present itself, previous to other symptoms. This secondary anemia may be so marked that it simulates very closely a primary anemia. On the contrary such profound anemia is rarely seen when the carcinoma involves either the descending colon or rectum. The point to emphasize is that in all cases of an unaccounted for anemia, a thorough examination should be

made for a malignancy of the large intestine.

A carcinoma may arise at any point in the large intestine. Excepting the rectum, the most frequent site is near the flexures.

The x-ray affords an additional method of examining these tumors of the large intestines. Following administration of a bismuth meal, or a bismuth enema, the x-ray will reveal any existing obstruction either partial or complete. A growth situated in the caecum or ascending colon must present a marked narrowing before a clear cut picture can be demonstrated by means of the x-ray. Tumors in this region are better localized when the bismuth has been given by mouth. If the growth is suspected of being either in the transverse or descending colon, a heavy mixture of bismuth slowly injected by rectum should be relied upon. A thinner mixture might pass through a narrow point without being obstructed.

Malignant tumors, uncomplicated with secondary infection of the large intestines, are as a general rule, not of great size; however, a secondary infection of the surrounding parts or the damming back of bowel contents frequently produce a mass readily palpated.

In case of marked obstruction, by placing the hand gently on the abdomen and massaging the entire area, hard coils of distended intestines may be felt to form, at times disappearing when the gases and contents escape with a gurgle.

The caecum is apt to be greatly distended regardless of the size of the growth and often there may be a regurgitation of the intestinal contents through the ileocaecal valve, causing a recognizable distention of the ileum.

The muscular movements seen in the large and small intestines in cases of obstruction are quite different in character. In the small intestine peristaltic movements are visible, while in the large bowel distention, with a palpable hardening of its wall is manifest.

It is remarkable at times the manner in which other diseases of the colon simulate

malignancy. The condition imitating most closely a malignant disease of the large intestine is diverticulitis. False diverticula are found in all parts of the large intestine, from the appendix to the rectum. In the ascending and transverse colon diverticula are rare. The sigmoid is the portion where they most often occur.

The diverticula are hernial protrusions of the mucosa through gaps in the muscular coat of the bowel, at points which are weakened probably by the passage of a blood vessel. In a small area of the intestine a large number of these protrusions at times may be found. As soon as the diverticula reach the serosa protective thickening and adhesions are formed around them until finally that part of the intestine involved becomes hard and thickened resembling a carcinoma. It is with great difficulty that the two are differentiated at times. The symptoms in their character, progress and duration seem precisely similar in the two diseases, with the possible exception of hemorrhage which rarely occurs in large amounts in diverticulitis. The development of a cancer may take place in a diverticulum of long standing with protracted irritation.

THE OPERATIVE TREATMENT OF MALIGNANT GROWTHS OF THE LARGE INTESTINE

The two outstanding causes for mortality following an operation for carcinoma of the large intestine are, toxemia due to either a complete or incomplete obstruction, and infection of the local field due to contamination during the resection of a portion of bowel filled with faecal material. A local contamination may or may not spread and terminate in a general peritoneal infection. In the occasional case if the retroperitoneal spaces have been exposed an infection may gain entrance to prove almost invariably fatal.

Toxemia and infection are, therefore, the two factors to be borne constantly in mind when deciding upon the type of operation to be made.

There seems to be no question but that, in cases of partial or complete obstruction, no attempt should be made to remove the

tumor. The primary consideration in the presence of an obstruction is to relieve the damming back of the intestinal contents. This relief is obtained by opening the colon proximally to the growth. This step will assist in eliminating the toxemia, also diminish the intra-intestinal pressure and at the same time decrease the danger of infection. Later following the removal of the carcinoma, the repair of anastomosed intestine is also facilitated.

The interval between the preliminary drainage operation and the resection of the growth is extended until the general condition of the patient would appear to be

improved to such an extent that the radical step can be taken without undue danger. After the resection a sufficient period of time should be allowed for the healing of the line of anastomosis in those cases where continuity of the intestine can be restored permitting a closure of the artificial anus.

TO EMPHASIZE

It is principally by the two stage operation that toxemia and infections are controlled in surgery of the large bowel. The factors assisting are ample fluids and a preparatory period of forced feeding and rest.

OPERATIONS AND OPERATORS FOR CHRONIC GLAUCOMA*

By ARCHIBALD CARY LEWIS, M.D., F.A.C.S., Memphis, Tenn.

A VARIETY of operations are still in vogue for the relief of chronic glaucoma. Each has its adherents and advocates for one reason or another. Some on the grounds of simplicity of performance; some familiarity with a certain technique; some claim greater safety, and others more permanency for the methods of their choice.

For several years I have thought it would be of interest to obtain some first-hand information from leading ophthalmologists throughout the country on this subject. With this idea in mind, in the summer of 1922, I sent a questionnaire to all Fellows of the American College of Surgeons, who were listed as ophthalmologists. My attention was to prepare a paper from the data thus obtained, for presentation at the 1923 meeting of the American Medical Association in San Francisco. After obtaining the privilege of doing this through the Section Secretary, Dr. Geo. Derby, I was unavoidably prevented from attending this meeting. Since that time, I have made several unsuccessful efforts to get it on the ophthalmological programs of several of our societies. The lapse of two and a half years has probably changed the views and methods of some men I shall quote here, but I think you can still find matter of interest and food for thought in their answers. About six hundred questionnaires were mailed out and three hundred and sixty-seven replies received. The questionnaire consisted of the following four questions:

No. 1. What kind of operation do you employ in chronic glaucoma?

No. 2. Why is this your method of choice?

No. 3. What (if any) other methods have

you used?

No. 4. Do you always advise immediate operation when your diagnosis is made?

Answers to question No. 1 give iridectomy as the operation of choice 170 times (nearly one-half of the total). Elliott's corneo-scleral trephine operation 118 (or nearly one-third). Iridotaxis, fifteen; La Grange, fourteen; Iridotomy, none; Cyclo-Dialysis, four; Posterior Sclerotomy, two; Horse-Hair Suture, one; Iridectomy or Trephine, fourteen; Iridectomy or LaGrange, two; Iridectomy or Iridotomy, one; Iridectomy or Cyclo-Dialysis, one; LaGrange or Trephine, three; Iridotomy or Trephine, two; Iridotaxis Trephine or LaGrange, one; Trephine or Cyclo-Dialysis, one; None Usually, seven.

Answers to question Number two give as reasons for performing iridectomy, experience, eleven; easily performed, thirteen; efficiency, twenty-seven; safety, fifteen; no late infections, eleven; and best results, seventy. Trephine operation, safety, eighteen; simplicity, ten; reliability, twenty; permanency, twenty-seven; best results, thirty-nine; no instruments in eyeball, one; least unsatisfactory, one.

Question three "What other methods have you used?", produces the following information: Fifty-one ophthalmologists have used one operation and answer "No other" to this question. One hundred fourteen have done iridectomies, but prefer other operations now. One hundred nine prefer other methods to the trephine. Fifty have found the LaGrange unsatisfactory; twenty-nine, sclerotomy; fourteen, iridotomy; eleven, iridotaxis; eight, cyclo-dialysis; two, iridecleisis; two, irido-dialysis; two, seton; one, sympathectotomy; one, Holth-punch.

Question Four "Do you always advise immediate operation when your diagnosis is

*Read before the Eye, Ear, Nose and Throat Section, Tennessee State Medical Association, Memphis, May 11, 12, 13, 1926.

made?" This received 254 negative answers. Thirteen others only operate as a "last resort" or "When all other methods fail." Forty-one answered "yes" without qualification. Among these are Callan of New York, Peter of Philadelphia, Banister of Omaha, Martin of Savannah, Calhoun of Atlanta, and Phillips of Cleveland. Fifteen others answered "usually" or "as a rule." These include Benedict of Rochester, Minn., Wood of Nashville, and Jervey of Greenville, South Carolina. Eight others, including H. Gifford of Omaha, advise immediate operation when the patient cannot be kept under close observation.

The following are among those who prefer LaGrange: John Weeks, New York; Heckle of Pittsburg; Francis and Phillips of Buffalo. Iridectomy: Hiram Woods, Baltimore; Feingold, New Orleans; John Green, St. Louis; Callan, New York, and Black of Milwaukee. Iridotaxis: Brawley, of Chicago; Stieren, of Pittsburg; Wood, of Nashville, and David Hanover, of Worcester, Mass. (The latter says he introduced it to this country). The Trephine operation is preferred by Peter, of Philadelphia; Calhoun, of Atlanta; Shannon, of New York; Cullom, of Nashville; Benedict, of Rochester; Foster, of New York; Wilmer, of Washington; Wurdemann, of Seattle; H. Gifford, of Omaha; Derby, of Boston; Fisher, of Los Angeles; Banister, of Omaha; and many others.

McReynolds of Dallas does a peripheral iridectomy first and then does a sclerectomy if necessary. Phillips of Cleveland, alone, prefers cyclodialysis. Verhoeff of Boston, employs five different procedures, according to existing conditions. "In chronic non-congestive glaucoma with high tension sclerostomy by my method: In chronic congestive glaucoma, Iridotaxis; in chronic glaucoma of early stage, Iridectomy; in Chronic glaucoma following cataract extraction, Beard's sclerostomy; in glaucoma simplex, Sclerostomy or Iridotaxis."

Lancaster of Boston, uses Elliott's trephine method or iridotaxis and says: "They are the surest and safest operations for this

condition I know of." He formerly used LaGrange.

Hiram Woods prefers "Iridectomy through scleral puncture, well back two m.m. or so, because there is less operative traumatism at operation and such eyes do not stand this well. There are too many unknown factors in chronic glaucoma to justify neglect of this factor of traumatism, also we avoid post-operative infection, etc."

Luther C. Peter says: "I resort to the Elliott operation because it is the only one that gives me results in a maximum number of patients. Iridectomy does not hold. Iridotaxis and the Heine operation do not appeal to me as good surgical proceedings. Operation is always advised immediately after my studies have been completed as experience tells us myotics will not hold in the vast majority of cases."

Charles H. May says: "I find in the average as good results from iridectomy as any other method. Some years ago I followed the vogue of using filtering scar operations quite often, but the results being no better than iridectomy, I perform the latter in most cases."

Allen Greenwood says: "I employ iridotaxis, trephining or LaGrange, according to the condition. I choose one of these methods according to the filtering cicatrix I desire to produce, that being the object I aim at always in my operations for chronic glaucoma."

John E. Weeks: "In my hands, the technique of the operation is slightly easier when the LaGrange method is employed, the end results are fully as good, if not a little better and the danger of late infection is less than with the Elliott operation." In answering question four he says: "No, I first try the effects of myotics. If the tension can be kept at or below the upper limit of normal, and there is no falling off of vision or field of vision, and no progressive paracentral scotomata, I continue the myotics and do not operate until there is evidence of failure in one or other of the above mentioned factors. If there is evidence of progression in the glaucoma, or if the tension cannot be maintained at or below the

upper limit of normal (25027 Schiotz) I advise operation, even if vision is normal. If myotics do not control, the earlier the operation the better are the end results."

F. Park Lewis answers question four as follows: "By no means, when optic atrophy is present depend on myotics, operative measures are useless."

Walter R. Parktr: "When the chamber is deep, and the fields not seriously contracted, iridectomy. When the chamber is shallow or if the fields are seriously contracted, irrespective of the depth of the ante chamber, I do a trephine operation."

The above choice in operation is based on the assumption that when the chamber is deep, the anterior lymph spaces are blocked and the outlet of lymph takes place through the posterior channels, iridectomy is performed to open up the filtering angle.

If the chamber is shallow, the assumption is that the posterior spaces are blocked, and the filtering angle is more or less patulous. The flow of the lymph anteriorly tends to press the lens forward. As the ant. lymph spaces are open, an iridectomy would be of no avail. In this class a trephine operation is performed.

All classes of chronic glaucoma are thus classified as chronic ant. glaucoma, or chronic posterior glaucoma, depending upon whether the anterior or posterior lymph spaces are less involved. The classification being based upon the depth of the ant. chamber."

G. E. DeSchweinitz: "It is very difficult to make definite replies to your questions because I am firmly convinced that whether operation shall or shall not be employed in chronic glaucoma depends on the type of the disease. Other things being equal, the earlier one operates the better are the operative results. I am inclined to think that more frequently than any other operation for chronic glaucoma, I employ Col. Elliott's corneo-scleral trephining, although that again depends upon the type, that is to say, whether one is dealing with what Dr. Parker calls posterior glaucoma, or anterior glaucoma, and in suitable cases I use a peripheral iridectomy, but my experience

is not a large one. As you know, Dr. Weeks thinks that that is the best of all of them. I have also tried, although more usually in subacute types, a modification of Heine's operation. Of course many times patients will not permit an operation, especially in the earlier stages when they have good vision, and in those circumstances I use myotics continuously, employing them in the manner which I described in my text book.

"I have not had enough experience in iridotaxis to give an individual opinion which would be satisfactory. Certainly, if one can produce by any of the methods a so-called filtering area, the results are better than those obtained by the classical iridectomy. The usual statement, "if myotics control the tendency for the contraction of the field of vision, is misleading, because although the peripheral field may cease to contract, a Bjerrum or other scotoma may be formed, and if the field of vision is to be utilized as the guide, then most careful investigation of the central area, the blind Jervey of S. C. formerly used wide iridectomy or LaGrange, but has recently adopted a method of his own, which he calls "Sclero-post-iridectomy" and reports excellent results from it.

The Reese Iridectomy is gaining favor, and as done by him, is certainly an ideal iridectomy. The writer has not had sufficient experience with it to fully master its difficulties, but is convinced of its efficiency.

Hogshead of Chattanooga says he now does the Reese Iridectomy instead of the trephine, and the LaGrange, which he formerly employed.

It is not within the scope of this paper to go into the newer methods of operating for glaucoma, or even into the merits of the older ones. Our object was only to find out what others are doing and their reasons for doing them. In the March, 1925, number of the American Journal of Ophthalmology there is an excellent article on "Newer Operations for Glaucoma," by Robert H. Buck of Chicago. This gives a description of most of the later operative procedures and is both timely and interesting.

I am sorry that the very limited time allowed here for presenting this subject will not permit a more complete analysis of the answers to my questionnaire. Many of them are of value as well as interest and I would have liked to rehearse them all. As it is impossible to do so, I will take this opportunity to thank each and everyone who so kindly and in many cases at the cost of considerable time and trouble to themselves, answered my questionnaire so fully and returned them so promptly.

There are few conclusions to be drawn from a paper of this character. Its contents are probably of more interest than of value. The most important question was number four and it brought out the most valuable advice and opinions. It shows that many ophthalmologists of large experience and undoubted ability advise immediate operation in glaucoma simplex. This is certainly the writer's opinion as to the proper procedure in the great majority of cases. The only exceptions to this are cases that you know can be kept under close observation. These are not many, but do exist, and can often be controlled indefinitely with myotics. Every free clinic case, every negro case, every out of town patient, and every other patient who has not sufficient intelligence to fully realize the gravity of the disease, and who can not be depended on to report regularly for observation, should be operated on just as soon as the diagnosis of chronic glaucoma is made.

DISCUSSION

DR. HERSCHEL EZELL, Nashville: It is both interesting and illuminating to note the answers received from the questionnaire sent out by Dr. Lewis. It is disappointing, however, to note that only 367 ophthalmologists out of the 600 addressed had the time or the inclination to send in replies, for had they all have answered the doctor's findings probably would have been different.

The operation of iridectomy for the relief of chronic glaucoma has been given renewed life by this summary. Nearly one-half of the total (or 170) of the replies received prefer this operation. Elliott's trephine operation must also be producing good results as 118 of the 367 replies prefer it. I am surprised to note that only fifteen of the 367 replies denote a preference for the operation

of iridotaxis, an operation, in my judgment, which offers much for the relief of this disease. All other methods of operating are seldom performed, according to the paper. It would be interesting to know the reasons for seven ophthalmologists not operating at all for the relief of this very dangerous eye disease.

It will be noted that iridectomy and the Ellett trephine operation are favored for about the same reasons, viz., ease of performance and best results, but iridectomy is preferred.

The great majority of ophthalmologist, according to the reports have tried many operations. Only fifty-one have replied that they have only used one operation. For this reason one would judge that iridectomy and the Ellett trephine operation are of real merit.

If we were to be guided by the results of the answers to the fourth question one would never advise immediate operation as there were 254 negative answers to this question. I agree, however, with the author of the paper and advise immediate operation after a diagnosis is made.

A report of this kind is interesting because we learn what others are doing for the relief of this most dreaded, perhaps of all eye diseases. It does not necessarily mean, however, that the correct answers to these questions have been obtained. Personally I would prefer the advice of a dozen of our best men rather than to take the opinions together of all the men throughout the country.

It is very doubtful that the same operation should be performed in every case. In this regard I must say that I respect the judgment of Drs. Parker and DeSchweinitz who advise that we should determine whether we are dealing with an anterior or a posterior glaucoma. As Dr. Parker has pointed out, "when the chamber is deep and the fields are not seriously contracted, do an iridectomy, and when the chamber is shallow, or if the fields are seriously contracted, irrespective of the depth of the anterior chamber, do a trephine operation."

I believe firmly that the results obtained through Dr. Lewis' questionnaire have demonstrated the best method of dealing with chronic glaucoma, but I am of the opinion also that none of the methods are ideal and that our methods will no doubt be changed for the better within the near future.

If I could rewrite my discussion I would incorporate Dr. Ellett's remarks of yesterday. When I advised with him what operation I should do on my patient. His reply was, "It does not matter what operation you do, for when you are through you will be sorry that you did not do some other."

DR. WILLARD STEELE, Chattanooga: It is indeed a pleasure to have listened to a paper such as Dr. Lewis has presented to this section today and I want to thank him for it. He has shown us by the replies to his questionnaires that eye men cannot unite on any one definite opera-

tion for a certain malady and I think the fact that we cannot agree is a compliment to our profession for there are so many details to be observed with each individual case that it would be impossible to lay down a hard and fast rule to guide us, for a definite operation all the time.

It has been aptly said that there is only two sure liars and they were the devil and statistics. Dr. Lewis has given us some very valuable figures in answer to his four questions and I feel sure that in spite of the untruthfulness of statistics we can glean much good for the replies.

The one thing brought out in the paper that strikes home to me is the lack of interest shown by our eye men over the country when only 367 replies were received out of 600 questionnaires sent out. It is appalling that the men over the country do not have enough courtesy and interest in their profession to answer four simple questions.

I have not had enough experience with the different operations for glaucoma other than the iridectomy and corneoscleral trephine to discuss other surgical procedures for the relief of chronic glaucoma. Some of the other methods from the descriptions of the technique, and from observation of the work done, rather appeal to me but when the time comes to operate, I have always fallen back on the iridectomy or trephine. I am rather inclined to favor the trephine in chronic glaucoma. In my hands it has given me very satisfactory results and I always feel like the danger of injury to the lens is less and the cosmetic results are better than in iridectomy.

The operation of iridotasis while it seems to be exactly contrary to what we consider to be sound surgical principles, seems to give excellent results, and as results are what we are striving for, I am leaning slightly in that direction and if I should take up a new surgical procedure for the relief of chronic glaucoma I think it would be iridotasis.

Whether to operate or not, and when to operate is a question that has puzzled surgeons from time immemorial. I am of the opinion that when your diagnosis of chronic glaucoma has been definitely made after careful study and consideration operation should be advised and the sooner the better.

I see no reason to operate after vision is reduced to almost nothing especially if it has been that way for some time for it has been my experience that nothing will benefit these cases.

Glaucoma in all of its aspects presents to us a problem that I fear has not been properly solved, but with such papers as this presented today and helpful discussion to follow, we are making progress in the right direction.

I am impressed very much with the views of Dr. Walter R. Parker who is guided by the depth of the anterior chamber. He advises trephine if the anterior chamber is shallow, and an iridectomy if the anterior chamber is deep.

DR. G. C. SAVAGE, Nashville: Some of us have lived long enough to have done all the operations that have been devised for glaucoma. I used the original Von Graefe operation, then the Elliott, then iridotasis. I have done all of them but since iridotasis was brought to my attention I have laid my trephine aside. Iridotasis is much easier in my judgment, and a much more efficient, operation than Dr. Elliott's trephine operation. I am equally sure that iridotasis is far superior to iridectomy and it seems to me it is more easy to do than iridectomy. Certainly there are others who have had a great number of cases of glaucoma in which they have done the operation of iridotasis. I feel very much inclined to use it in preference to iridectomy or trephining, but of course, there will be some who, as long as time lasts, will hold on to the Von Graefe iridectomy. I think if Von Graefe had lived he would have probably abandoned his iridectomy operation in favor of iridotasis. Elliott is still living and I understand he is not willing that anything should supplant his operation of trephining. In my opinion iridotasis is far preferable in every respect. We often get an improvement in sight over what it was at the time of operation. I have never had any regret at taking up the operation of iridotasis. I have asked some patients on whom I did this operation ten years ago to be present at the clinic tomorrow morning.

DR. A. C. LEWIS, Memphis (closing the discussion): I want to thank the gentlemen who discussed the paper. I think the trephine operation is really gaining in popularity and iridectomy is on the decline. The questionnaire showed the iridectomy was being done by the men who had done no other operation or by the older men who did not make changes quickly. It really showed that the corneoscleral operation is gaining in popularity very fast. It is my choice, all things being equal. For some cases this operation is not advisable. There are some points about the corneoscleral operation that should be observed. I do not think the one mm. trephine is worth a cent; I do not like the one and one-half mm. trephine and think the two mm. opening should be made in all adult eyes because there is always a tendency for them to close. As little traumatism as possible should be used. You should make as thick a conjunctival flap as possible and separate it very carefully so as not to get any traumatism. Adhesions, interfering with the filtering bleb that you want to have there over the

trephine opening, are thus prevented. Another thing I have not done for some time is splitting the corenea as Col. Elliott advised and most surgeons still do.

I think it unnecessary and the end results more permanent when this is omitted. You leave a

scar that will tend to close your opening and interfere with your filtering bleb by splitting the cornea. I think it is better to separate the conjunctiva as far as you can down on the cornea and remove a button of corneosclera without doing any splitting of the cornea.



BATTLE MALONE, M. D., Memphis, Tenn.
Newly Elected President of the Tennessee State Medical Association

THE JOURNAL

OF THE

TENNESSEE STATE MEDICAL ASSOCIATION

Devoted to the Interests of the Medical Profession of Tennessee

Office of Publication, 550 Lambuth Bldg., Nashville, Tenn.

H. H. SHOULDERS, M.D., Editor and Secretary

MARCH, 1927

THE POLICY OF THE JOURNAL.

The purposes of the Tennessee State Medical Association as set forth in Article II of the Constitution are as follows:

First. To organize into one unit all the eligible doctors of Tennessee.

Second. To extend medical knowledge and advance medical science.

Third. To elevate the standards of medical education.

Fourth. The enactment and enforcement of just medical laws.

Fifth. To promote friendly intercourse among physicians.

Sixth. To guard and foster the material interests of doctors.

Seventh. For the enlightenment of the public, and the direction of public opinion with reference to medical problems, to the end that the Profession May Become More Honorable and More Useful.

The publication of such matter as will promote these ends will be the policy of this Journal. The Journal is but a means to the ends sought. It is not of itself an end. The Journal and the officers can promote—they can aid, they, alone, cannot accomplish a single one of these purposes. Purpose number one is that of creating a complete medical organization. Less than fifty per cent of the doctors of Tennessee are members of the state organization today.

Efforts toward accomplishing any of the other purposes will be relatively ineffective until a more complete medical organization is created. When every eligible doctor in Tennessee is an active member of the state medical association, all the other purposes of organized medicine will be easy of accomplishment.

If we should adopt a slogan it should be "Every eligible doctor in Tennessee a member of the State Society." It surely can be said truthfully, that there never was a time in the history of medicine when organized medical effort was more urgently needed than the present. The reasons for this need are apparent to anyone who looks about at all. Shall we adopt the slogan and go to work?
H. H. S.

THE MEN BEHIND THE MAN BEHIND THE GUN.

At the recent meeting in Chattanooga the House of Delegates took such action as would place responsibility for the journal on the shoulders of the Board of Trustees. The Board of Trustees was increased from three to five members. The Trustees are directly behind the Secretary-Editor. The House of Delegates is behind the Trustees and the entire membership is behind the House of Delegates.

With all this driving force in operation the Journal should, at least, come out on time.

THE CHATTANOOGA MEETING.

We suppose that the publication of a statement concerning the April meeting of the State Association in the March issue of the state journal may be regarded as *advance news*.

The meeting was a success. The registered attendance was three hundred and twenty-five. The program was good, almost all of those listed to read papers were present. The papers were good.

The Dry Clinics put on by members of the Chattanooga and Hamilton County Medical Society was a feature of the program deserving of special mention. The individual numbers were good, and they were put across with snap. The attendance at these clinics was exceptionally good.

The Commercial exhibits would have done credit to a much larger organization.

Above all, the efficient committee on arrangements deserves credit. One who has never served on such a committee knows nothing of the work that is to be done. It

is arduous and time-consuming.

The committee on entertainment did everything that could be done. Certainly no one wanted for anything except fairer weather.

The Chattanooga and Hamilton County Medical Society deserves much credit for the manner in which it acted as host of the association. Certainly all who attended has now, and will continue to have, a sense of gratitude for a very delightful time.

H. H. S.

DEATHS

Dr. J. Hugh Carter of Memphis, aged 48, died February 8th. Dr. Carter graduated from the Memphis Hospital, Medical College, in the class of 1905 and was a member of the Shelby County Medical Society.

Dr. Chas. A. Black of Nashville, aged 71, died February 16th. Dr. Black graduated from Vanderbilt University, School of Medicine in the class of 1879.

Dr. R. H. Milam, of Lexington, aged 56, died March 13th. Dr. Milam was a member of the Henderson County Medical Society.

Dr. H. A. Mann of Memphis, aged 39, died March 23d. Dr. Mann graduated from the University of Tennessee, College of Medicine, Memphis, of the class of 1912.

MEDICAL SOCIETIES

The West Tennessee Medical and Surgical Association will hold its thirty-sixth annual session at Dyersburg, Wednesday and Thursday, May the eleventh and twelfth.

The East Tennessee Medical Association will meet at Johnson City May twelfth and thirteenth. Dr. Deaver of Philadelphia will be the guest of honor. The Washington

County Medical Society is putting much effort in circulation to make the meeting a success and the secretary, Dr. Jesse C. Hill, is urging a record attendance.

The Tri-County Medical Society composed of Lincoln, Bedford and Marshall counties, met March 17th in Shelbyville. Dr. John B. Haskins of Chattanooga was the guest of honor. The Bedford County Society entertained the guests at luncheon.

The Robertson County Medical Society held its regular monthly session in Springfield March 15th with Dr. J. R. Connell, vice-president of Adams, presiding.

The Coffee County Medical Association met March 17th at Tullahoma for an interesting study of endocarditis. Dr. E. P. Vaughan read an excellent paper on the subject.

The Blount County Medical Society met March 17th at Maryville and held a very spirited and enthusiastic meeting.

The sixty-fifth semi-annual meeting of the Middle Tennessee Medical Association will be held in Pulaski on May fifth and sixth. The officers for the meeting are Dr. W. W. Porter, Springfield, president; Dr. E. M. Sanders, Nashville, vice-president; Dr. Sam P. Bailey, Nashville, secretary-treasurer. The Committee on Arrangements is composed of the following Pulaski physicians: Dr. J. K. Blackburn, chairman; Dr. C. A. Abernathy, Dr. G. D. Butler, Dr. A. W. Dean, Dr. W. J. Johnson, and Dr. J. A. LaRue.

The Montgomery County Medical Society met January 21st in Clarksville and elected the following officers: Dr. M. L. Hughes, president; Dr. M. L. Shelby, vice-president; Dr. H. A. Nesbitt, secretary-treasurer. All reside in Clarksville.

Officers elected to the Robertson County Medical Society are as follows: Dr. G. R. Jones, Orlanda, president; Dr. J. R. Con-

nell, Adams, vice-president; Dr. W. F. Fyke, Springfield, secretary-treasurer.

Dr. H. T. Collier of McKenzie, was elected president of the Tri-State Medical Association for 1927 at the close of a recent session held in Memphis.

NEWS NOTES AND COMMENT

Dr. J. B. Hibbetts, Jr., of Nashville, captain and flight surgeon of the 105th observation squadron, Tennessee National Guard, has been appointed medical examiner of the aeronautics branch of the department of commerce.

Dr. W. S. Harwell, formerly of Pulaski, has moved to Lynchburg to continue the practice of medicine.

Dr. W. S. Clack has moved his office from Rockwood to Chattanooga and will make that city his home.

Dr. G. Canby Robinson, head of the medical school of Vanderbilt, was the guest at a dinner given in his honor by the Cincinnati Academy of Medicine while on a recent visit in Cincinnati.

Dr. E. A. Patton, formerly Medical Director of the Tuberculosis Sanatorium at Pressmen Home, Tenn., has resigned and accepted the position of Medical Director at Beverly Hills, Knoxville, Tenn.

Dr. J. S. Lyons of Rogersville, Tenn., has accepted the position as Medical Director of the Tuberculosis Sanatorium at Pressmen Home, Tenn., making three visits weekly to the Sanatorium.

Dr. J. A. Johnson of Kansas City, Mo., has accepted the position of Assistant Medical Director of the Tuberculosis at Pressmen Home, Tenn., and resides in the building.

Dr. W. C. Lyons, of Sörgoinville, Tenn., was elected City Physician of Kingsport, Tenn., effective January first.

Dr. J. S. Lyons of Rogersville has recently purchased a building on Church Street to be used as an office. He has it now equipped throughout, including a new x-ray outfit, with six beds for emergency and accident cases.

CORRESPONDENCE

We have a statement from Dr. W. C. Rappleye, Director of the Commission on Medical Education, to the effect that he will be glad to supply a preliminary report of the Commission on Medical Education to any of the readers of this journal who may be interested in the general question of medical education and practice. His address is 215 Whitney Avenue, New Haven, Connecticut.

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THE DECLINE OF PRESTIGE IN THE MEDICAL PROFESSION*

E. R. ZEMP, B.S., M.D., Knoxville

HUMAN nature is the same the world over. The outstanding difference between individuals, or parties, is largely a matter of education and environment. Individual ability, outside of a natural inheritance, depends largely upon these two factors. Individuals who have the same eyes from an anatomical standpoint have not the same capacity for seeing. Sight in its broader sense embraces far more than the mere ability to distinguish objects, or to tell light from darkness. Many individuals with perfectly normal eyes live in a wilderness of darkness. They cannot see the great and wonderful and beautiful things of life that surround them. Education is a great eye-opener. It restores sight to those who cannot see, and makes the color-blind see in a normal way. Near-sightedness is a fault possessed by all. It is easy to think that the whole world is wrong when we are wrong ourselves. It is still easier to believe the other fellow is wrong and that we are right. Clearness of vision as to what is really wrong with an institution of any kind requires deep, sympathetic study and good judgment. So it is with some hesitancy that I try to analyze the existing conditions in the medical

profession today and to arrive at a just conclusion as to what is the matter with it.

That there is something the matter with it there can be no doubt. We are suffering from an insidious and perhaps fatal malady whose symptoms are becoming every day more manifest and whose weakening influence upon the medical body is being felt more and more.

Only a short time ago the medical profession occupied a high and exalted place in the eyes of the public. Our decrees were carried out as the mandates of royalty. Our opinions were respected and regarded as the last words on matters of health. Our members were honored and revered and they carried themselves with a dignity and austerity that commanded both the respect and love of those among whom they lived and moved. We were not only physicians in those days, but we were priests and counselors as well, for the physician then was the embodiment of all that was good, of all that was wise, of all that was lovable. He was a trinity of wisdom, faithfulness and sympathy. His medical education was simply a part of a wide and general knowledge and his chief aim was to render to his patient a personal service that covered all of his ailments, whether of mind, body or soul. Today the picture is somewhat changed. The medical profes-

*Presidential address delivered before the Tennessee State Medical Association at Chattanooga, April 12, 1927.

sion is losing caste and it will be only a few years before organized medicine is fighting for its very existence. We are being assailed on all sides by various influences and conditions so that our profession in a short time will be degraded into a Communistic and Socialistic state. Medicine today is drifting into lay control and individually and collectively we are fast losing prestige. This is partly our own fault and partly the fault of the tendencies of the times. We are being annoyed and bound by obnoxious laws which take away our rights and stultify our judgment. As the New York World says, "Various organizations of women, which probably do not represent ten per cent of the sex, maintain at times a veritable reign of terror in legislative bodies by pretending to speak in the name of all women. In consequence half the country is now bedeviled by some form or other of harem government, which is in no respect an expression of public opinion." As a result of these various influences we have with us today the Harrison Narcotic Act, under which the ruling of the commissioner immediately becomes a law and it makes even a Tennessee lawyer scratch his head to interpret correctly just what the law means. This law is so surrounded with red tape and permits of so many different interpretations that any physician is liable to have his office raided and be thrown in jail for violating some technicality which he did not know existed.

The Shepard-Towner Law is another socialistic crime. It entirely ignores the fact that the problem of reducing maternal and infant death rates is purely a medical problem. It has two more years to go, but the Children's Bureau wants it extended to five years. It has been a dismal failure from the standpoint of saving mothers and babies, but a wonderful success in furnishing opportunities for graft to professional social workers. Not only does the Act specifically prohibit the use of one Federal dollar to rent a bed in a hospital, or hire a taxicab for a needy mother, or the clothing "equipment" to keep a new-born baby from freezing, but it also undertakes to

command the states that not even "the smallest part" of the "matched" funds raised by the state shall be used for any "gratuity" to needy mothers and infants! Every cent is for salaries and "social service." (1)

Senator Moses, of New Hampshire, introduced an amendment as a substitute for the Maternity Act. At that time he issued the following statement: "The so-called Maternity Bill is designed to create jobs, and to procure the circulation of literature accompanied by unwelcome and unwise intrusion into the most intimate of private affairs. If the real desire of the proponents of the measure is to give real help to expectant mothers, they should realize that provisions should be made for doctors and not documents, for medical men instead of 'Meddlesome Matties.'" So strong was the influence of the harem government that Senator Moses' bill was not even allowed a place in the hearing. "Socialist leaders are writing our Federal laws and constitutional amendments not because they are out-voting us, but because they are outwitting us and bluffing us." (1)

Another blow at medical efficiency is struck through the Supreme Court's interpretation of the Volstead Act. This decision implies that a physician must not use his judgment in treating a sick patient, but must treat him according to the Eighteenth Amendment. Leaving out the question as to whether alcohol has a real value in the treatment of disease, it is an insult to the intelligence of any physician worthy of the name to be told by a body of laymen how much of a certain remedy he shall give his patient when it is entirely ignorant of the existing conditions. If by law the quantity of alcohol to be used by the physician can be limited, then why cannot Congress say that a patient should not receive a purgative more than once a week, or that a case of specific urethritis should not receive an injection more than once in ten days, and so on, ad nauseam!

As the Chicago Tribune says, "It is the laughing absurdity which puts Congress in

the practice of medicine as the quack doctor without a diploma."

Congress is telling physidians how to practice medicine, about which it knows nothing. If it possesses no greater amount of knowledge concerning the economic problems now confronting the Nation, then God help us!

It is characteristic of medical men that they become so engaged in their professional work that they do not realize what is going on in the world around them until something of unusual importance happens. The rank and file of our profession do not keep in touch with the various tendencies of the time, and even if they do, they do not seem to realize their importance. There has always prevailed in the medical profession a widespread apathy when it comes to combatting those influences which tend to destroy us. Individually we lack initiative and there is a strong tendency to "Let George do it."

Among our ranks are found the best and most brilliant men in the community, but when it comes to concerted action directed against some influence that threatens us, for sheer asininity we make the National Democratic Convention look like a set of pikers.

We say we love our profession and that we honor it, but are we sincere? "Sincerity is impossible unless it pervades the whole being, and the pretense of it saps the very foundation of character." If we love our profession then it is high time we were fighting for it.

The time has passed when we can shut ourselves off from society at large by the wall of aloofness, for along the streets are freely parked the wonders of the cultists and the charlatans, and the sick cannot tell the difference. The physician of today owes not only to his patients a personal service, but he owes to his community the same, and service to humanity should be our prime object rather than service to the individual.

"Medical men should be filled with shame that we are unable to acquaint the public with the values our profession can con-

tribute to a growing civilization. Instead we bow our heads to organizations of lay people, as the American Association for Medical Progress, who pitying our poor endeavors, yet believing in us, attempt to do our educational work for and in support of us." (2) If in the near future state medicine should come to be a reality, we will have only ourselves to blame in that we failed to do a duty that clearly stood before us."

Medicine in the future must offer a larger human service if we would retain our erstwhile prestige and regain that which we have lost. No greater calamity could befall us than to have all medical service under State and Federal control.

And yet, Surgeon General Cumming, of the United States Health Service, advocated such a control in a public speech delivered a short time ago. Public Health Service, whether by laymen or professionals, seems to warp the brain. "Such a scheme," declares Dr. Angus McLean, of Detroit, "would destroy the scientific and social incentives which have brought the great majority of medical men into the profession, and upon which the advance of medical science must depend. It would be a mistake to reduce all medical service to the type of dead-level and directed routine work typical of a factory. I hope the medical profession has too much strength, pride and dignity, and sees too clearly the service it owes to society ever to submit to its direction, control nad remuneration at the hands of politics." (3)

But have we too much strength, pride and dignity? And do we see clearly the service we owe society? Our lethargy would indicate that we are woefully indifferent or sadly incompetent to grasp the situation.

It is time to awaken. The medical profession must gird on its armor and go forth to battle. We must combine science with militancy and teach the public that we are the true defenders of public health. In organized medicine lies our only hope of combatting the many influences that tend to destroy us. The American Medical Asso-

ciation is a wonderful organization, but its strength depends upon the efficiency of the State organization. The State Association is only as strong as the County Associations, and the County Associations are strong only to the degree that the individual members are efficient. Every county in every state should be organized and every member of every county society should be willing to contribute his share of work and wisdom.

I am not one who believes that every man who can sign "M.D." after his name should be taken into the Medical Society. No one should be admitted to membership whose ideals are not higher than personal gain and whose sense of honor can be blunted by avarice.

As it is today, many of our members contribute absolutely nothing to the welfare of our societies, but they join simply to be numbered among the respectable element of their profession and through fear of what might happen to them if they did not have at times the help of their confreres. They are worse than parasites and can always be counted upon to defeat by their votes any good movement that may be undertaken by their society. Slackers at heart, they cling to respectability like a drowning man clings to a piece of driftwood. In the past we have been too lenient and too sympathetic in the selection of members for our County Societies. In the future we must be more careful, for it is very difficult to get an obnoxious and useless member out of your society after he has once gotten in. It is a sad commentary on the honor and integrity of our profession to see men occupying exalted positions excusing and sympathizing with those members of our association who have proven themselves unworthy of our confidence and respect.

One way to improve the efficiency of organized medicine is by exercising more care and more judgment in selecting our members. Quality and not quantity should be our policy in the future.

The developing of efficient county associations will naturally produce a more effi-

cient State Association, but one of the first duties of the State Association should be to create and sustain active, competent county associations. In this respect our own State Association is woefully lacking. Our State is not thoroughly organized and what counties are organized get no help or sympathy from the State Association only in that each member of the County Association is given the honor of contributing four dollars each year for a Journal that never comes and for the carrying out of certain procedures that never proceed. What is the cause of this? In the November, 1926, issue of our Journal, which arrived in March, 1927, the editor says: "The convening of the State Legislature calls attention to the fact that the Tennessee State Medical Association has no Legislative Committee to look after the interest of the Association and organized medicine; that is to say, there is no committee that can function." But why pick out the Legislative Committee to say this? He could have added with equal truthfulness that there are one President, three Vice-Presidents, ten Councilors, three Trustees of the Journal, six standing committees, and one Secretary-Editor, all of whom are in the same boat, and therein lies the impotency of our State Association. It is largely an association of officers and committees in name only. No one from the President down seems to realize the importance of the work to be done, or there is a lack of interest and initiative. No one can possibly feel his unworthiness more keenly than I have felt mine during the past year. It has been impossible for me to visit the various sections of the State and assist the councilors in building up the County Societies, but what has happened to me has happened to every other president of the Association in his time. Even the councilors have not visited the counties within their district to inquire into the condition of the profession and for improving and increasing the zeal of the County Societies. The various committees appointed have not functioned as far as I know, the members seeming to think the positions purely honorary. There is one

brilliant exception, the Committee on Medical Defense, and to its chairman, Dr. S. R. Miller, of Knoxville, is due a large portion of the credit for this committee being a most efficient one. It will be noticed that this committee is not changed every year. They have rendered to the members of the Association some very valuable and needed assistance.

Can anything be done to change this state of woeful inertia into one of joyful activity? I believe it can be done. In the first place we should obtain a Mussolini in the way of a full-blooded, full-time, enthusiastic Secretary-Editor who will tell us what to do and then make us do it. He should send to our desk every month a live, snappy, readable Journal. He should visit every County Society in the State, not once but several times a year, and bring to them a message of cheer and revive their enthusiasm. He should be a man of high ideals, of a strong personality and well posted in medical matters generally. I do not mean in any way to reflect upon our present Secretary-Editor. He has performed his duties as faithfully and as well as anyone could possibly do under the present conditions, but the business of the State Association cannot be carried on as a side issue. It requires the whole time and the whole energy of one whose heart is in the work. In other words, the business of running a medical association successfully is a special work that requires a specialist.

We should have a set of active trustees invested with the power to hire and to fire and these trustees should be selected not from sentimentnal reasons, but because of their knowledge and willingness to perform the duties entrusted to them. We should have a Legislative Committee that is not appointed each year, but appointed for an indefinite term. The changing of this committee every year is a grave mistake, for only men of experience can be of any service, and experience can only be obtained in time. They should not be appointed from any particular part of the State, but they should be in easy access of each other

and in easy reach of the Legislature. They should be given the service of a paid attorney to guide and help them in their work. A paid lobbyist, if you please! For it takes just that to get what you want from a legislature, not to bribe but to educate. To this end a fund should be created by special assessment for educational and legislative purposes.

The work of the Association should be on a broader and more humanitarian basis.

We must realize that educating the public in the matters of health is just as much our duty as attending the individual sick. We must teach them the difference between truth, as represented by medicine, and falsehood, as represented by the various cults. We should advertise boldly to the public the value of our wares and reveal to them that we have in our profession men of brains capable and willing to direct all activities pertaining to their health and that they do not have to spend thousands of dollars for socialistic activities which are but wonderful opportunities for graft and wastefulness.

What the medical profession of Tennessee needs is an old-time revival, a revival that will awaken within the heart of each member a keener sense of duty to his fellowman, of duty to his profession, of duty to his State. In the rush and grind of daily routine and in our efforts to better ourselves financially, we are losing sight of the greater and more ennobling things of our profession and missing many of its greatest joys. We are proud of the great men of our profession, but are they proud of us? Fate may not have cast our lot among the seats of the mighty nor with those who have achieved great honor and glory, and yet each one of us may in our own sphere rise to greater heights of honor and distinction. Do we wish to build enduring monuments to our names? Then remember "deeds, not stones, are the true monuments of the great." That there is much work to be done there can be no doubt, and in doing this work well we will bring not only happiness to others but peace and con-

tentment to ourselves. It was Henry Van Dyke who gave us this little prayer, "Lord, give me work enough to do each day, and strength enough to do it." The medical profession is altruistically committed to the service of others regardless of the sacrifice required.

It is only through unselfish devotion to our code of ethics in its broadest sense that we will ever be able to restore to the title of doctor, now kicked about at random, the dignity and reverence that it once possessed.

"So live that when thy summons comes to join
The innumerable caravan that moves
To that mysterious realm, where each shall take
His chamber in the silent halls of death,
Thou go not, like the quarry-slave at night,
Scourged to his dungeon, but, sustained and
soothed
By an unfaltering trust, approach thy grave
Like one who wraps the drapery of his couch
About him, and lies down to pleasant dreams."
—Thanatopsis.

REFERENCES

- (1) The Woman's Patriotic Publishing Company.
- (2) Rexwald Brown—California and Western Medicine, Oct., 1926.
- (3) Journal Michigan State Medical Society, February, 1927.

RAILWAY HEALTH INSPECTION*

A. F. RICHARDS, M.D., Nashville,

THE railways of our country may be compared to a great city or many great cities. When we think of the hundreds of thousands of people on the railroads living, boarding, sleeping and intermingling with each other socially and moving from one climate to another and from one elevation to another, moving on tracks of steel and rapidly carrying its human freight through all kinds of sanitary conditions as well as disease conditions, we begin to see something of the dangers and possibilities to which they are endangered.

The work must be performed without fail and with speed and the least possible physical injury. The half of the obligation to the public is not met in seeing to the machinery, having the engine in perfect order and the tracks sounded and inspected with all the bearings well oiled and the engine supplied with water and fuel and the tracking lined and inspected daily and a constant testing of the switches, with all of this in order with a trained force in charge to operate it.

The railroad is just now beginning to assume the other fifty per cent of obligation receiving its load of humanity for transporting them over the country. In accomplishing this task of sanitation, it necessarily assumes a phase of work which is scientific in its nature so far as it is effected by prevention and cure of disease. This is being realized more and more each year as is shown by the attention given the subject by leading railway companies as well as other large corporations, and placing sanitation under a special department.

Cleanliness, the foundation of all sanitation, must be maintained at any cost, the needs of the people as regards thirst and

hunger, the kidney and bowel function must be met. The fatigue of the day must be met by a clean, healthful sanitary sleeping place, so that the railroad patron may be refreshed that he may continue his journey or pursue his business the next day, and in order that this may be accomplished proper temperature, light and ventilation must be maintained.

The common carriers must carry all kinds of humanity, including the sick and well, and must handle them with uniform care and protect their health as they do life and limb.

To do this it requires an army of trained employees who must be supervised and who have their own offices and equipment. Imagine if you can all the depots, stations, work shops and office buildings of the railroads of Tennessee on one plot of ground. It would rival a city even the size of Chattanooga, and these all belong to the railroad and must be sanitized.

It is within the last fifteen years that the great railway system began to systematically sanitize with a regular department for that purpose and carry out the suggestions of such inspections. These inspections should be along public health lines of progress, that they may not in any way conflict with state laws. The tendency now is to unify health problems throughout the United States because the people are intermingling with each other from state to state, just so do the railroads know no state line. Therefore, a committee of experts have drafted the railway sanitary code which conforms to the laws of the different states. This code was recommended by the Surgeon General of the United States in 1920 and has been adopted by most of the states.

This code is known as the Standard Rail-

*Chairman's address before the Tennessee State Association of Railway Surgeons held at Chattanooga, April 11, 1927.

way Sanitary Code and deals definitely with the sanitation of offices, shops and camps, cleaning and disinfection of coaches and stations, water and ice supplies and the transportation of persons having communicable disease.

When we come to think of a well-equipped passenger train at a heavy primary cost and then moved with the train crew and supplied with all the necessary conveniences such as water, food, light, heat, ice and fans, and then must be cleaned inside and out daily and sometimes between destinations when time will permit, we can see that it is high class house-keeping every day and night.

The business of these trains is to carry the public for pay, therefore they become subject to public supervision relative to health and sanitation which the railway sanitary code deals with.

The same care should be taken of the stations, work shops, freight houses and all quarters where men and women congregate to work.

The water supplies of railroads must be tested and reports and certificates obtained and submitted to the Surgeon General of the United States, and if water shows below standard requirement, must be procured from some other source. It is said that no problem is more carefully handled than the drinking water used by railroads.

The question of food is another important matter that requires constant supervising by the very best care possible. They necessarily have to maintain great stores of supplies and kitchens and serving quarters either directly or indirectly and all handlers of food should be examined periodically according to the code. While the code rules out all suspects even of contagious and communicable disease, its rulings are useless, when we know the duplicity of our fellowmen.

The code especially enumerates the diseases in Section 1 which shall not be transported, but without medical inspection it is impossible to make a diagnosis and thereby stop the dangerous traveler.

The code further permits a railway to

carry contagious cases if considered an emergency. All coaches carrying such patients should be treated as other infected premises from a public health viewpoint.

Attention is called to the fact that railroad companies are taking more and more active interest in railway sanitation, which is fostered by the interest of employees and medical and surgical sections of the American Railway Association.

Therefore I wish to recommend: From the public health point of view there should be a health officer for every railroad operating in the state. This officer should be a physician peculiarly fitted by experience and training to the work and should be appointed by the Chief Surgeon of the railroad and supervised by him. This officer should be a whole-time man on a salary of \$——, and his duties should consist of visiting and inspecting regularly the properties of the railroad company, which should include all cases where the public come in contact with them, also groups of men who are congregated for work, in fact, follow the Railway Sanitary Code, a copy of which is easily procured.

This officer should make all reports in duplicate, one copy for the Chief Surgeon and the other copy for the State Department of Public Health, and in this way keep the public health and railroad company with a common understanding as to existing conditions at all times.

At present there is no way of knowing the exact sanitary conditions of the railroad relative to public health sanitary conditions.

The railroads bring veritable cities on wheels moving large masses of people over the face of the earth, and this, too, without any direct inspection of or reporting except as sanitary conditions may be observed by the outside observer or some other enemy to the railroad company.

The subject of public health and preventive medicine is getting more and more attention from time to time as the public becomes more and more enlightened upon these subjects. Furthermore, we see that some of the big roads and bigger compa-

nies of the country are putting on their whole-time health officers, for checking up and taking care of the public health of their employees and the citizens who patronize them.

We know that cleanliness is the basis of all sanitation, but we further know that from the layman's point of view sightliness is cleanliness, but from the medical and health point of view, sightliness is not necessarily cleanliness. This character of work belongs to the medical mind only. My recent experience and observation has convinced me that public health and preventive medicine must be directed by the trained medical mind.

Under the rules of transportation, it is understood that all persons must be transported by our common carriers with but few exceptions, and it is my recommendation that the railroad companies should have these inspections done regularly and carefully by a competent man to take care of the unsuspecting public who have to travel en masse and come in close contact with each other, which includes all classes of people, and who have to spend hours of waiting in the stations; who have to patronize dining rooms, waiting rooms, toilets, both in and out of stations where the keepers of some have such varied and diversified ideas of cleanliness that this can be done only by a health officer.

This sanitary problem of common carriers is outlined in detail by the Standard Sanitary Code, and comes under one of the divisions of preventive medicine, that lusty and growing infant of medical science, which at present is engrossing and holding the attention of both the profession and laity.

The Sanitary Code, referred to, as an effort upon the part of railways of the United States to bring about perfect health conditions, is a great stride in the right direction, but is inert except where intelligently executed, and is certainly a success when so done.

The question arises, "Does it pay?" Yes, it certainly pays in proportion to all or

any other preventive or sanitary measure. All corporations of every character, manufacturing, railroads, mines, construction, mercantile, insurance, in fact, every phase of business where men are needed to labor or to patronize a business is coming to know that prevention is the greatest boon to humanity. It is the cheapest in the long run at whatever the cost.

With the uniting in one solid phalanx all the social, professional, religious and business interests it will enable the profession of medicine, through its organized agencies to approach the ideal in health and longevity. The profession are creating the means, such as vaccinations, quarantining, drainage, screening, and periodic health examinations, etc., but with all this we must have the co-operation and support of the civic and business interests of the world before our knowledge and scientific attainments can bring good returns. It is a known fact that the scientific world does not have the money to apply the great discoveries to the people, so this rests within the hands of the wealthy philanthropist and government. While the railroads have kept pace with, and in some instances in advance of other industries, there is and will constantly be advances to make in health lines as well as business, and it occurs to me that the suggestion or recommendation made in this paper would be a great stride in the right direction and a most suitable time for the chief surgeons of the Southern railroads to immortalize themselves in making an epoch in railway history.

SUMMARY

1. Railroading is an industry of such proportion that it requires sanitary supervision.
2. That intelligent regular health inspection should be made.
3. That railroads should employ a medical health inspector whose inspections should be made in duplicate, furnished to the Chief Surgeon and the State Health Department.
4. That none but a physician is suited to this work.

DISCUSSION

DR. R. T. WOODS, Bellbuckle: I wish to endorse Dr. Richard's paper very heartily. Sanitation is a work I have been interested in for twenty years or more, and I have wondered why it was that the railroads do not have sanitary inspectors. Seeing the conditions that exist around some depots and section houses and so forth,

makes one think this would be very beneficial.

I move you, Sir, that this Association go on record as endorsing the paper, and that the matter be referred to the Chief Surgeon of each road operating in the State for his approval, if he sees proper, to the proper authorities, looking toward the consummation of a sanitary department for the railways.

Motion seconded and corried.

MINUTES OF THE GENERAL MEETINGS OF THE NINETY-FOURTH ANNUAL SESSION, TENNESSEE STATE MEDICAL ASSOCIATION

The Ninety-fourth Annual Convention of the Tennessee State Medical Association was called to order in Scientific Assembly at the Hotel Patten, Chattanooga, Tennessee, on Tuesday, April 12, 1927, at 9:10 a.m., by the Chairman of the Committee on Arrangements, Dr. John B. Steele, Chattanooga.

Invocation, Rev. Oliver J. Hart.

Address of Welcome

Hon. Richard Hardy, Mayor of Chattanooga, welcomed the Association most cordially on behalf of the city.

Dr. John B. Steele extended a welcome on behalf of the Chattanooga and Hamilton County Medical Society, and announced the plans that had been made for the meeting, for the golf tournament, and other entertainment.

Dr. Cooper Holtzclaw added a personal word of welcome and expressed his pleasure at seeing so many old friends.

Dr. Steele then introduced the president, Dr. E. R. Zemp, Knoxville, and requested him to take the chair.

Scientific Program

Dr. Jack Witherspoon, Nashville, presented a paper entitled "Cardiospasm, Esophageal Obstruction and Dilatation: Their Treatment." Discussed by Drs. Carl Crutchfield, Nashville; Samuel P. Bailey, Nashville; Hilliard Wood, Nashville; Cooper Holtzclaw, Chattanooga; C. N. Cowden, Nashville; J. T. Leeper, Lenoir City, and in closing by Dr. Witherspoon.

Dr. John B. Steele announced that the following gentlemen had been selected to serve as a Committee on Credentials, and requested them to meet at once to examine the credentials of the delegates: Dr. A. F. Richards, Chairman; Dr. George R. Livormore, West Tennessee; Dr. J. D. L. McPheeters, East Tennessee.

Dr. C. H. Heacock, Memphis, presented a paper entitled "The Roentgen-ray as an Aid in Carcinoma of the Esophagus." (No discussion.)

Dr. C. N. Cowden, Nashville, read a paper entitled "Mercurochrome and Gentian Violet in the Treatment of Septicemia."

FIRST DAY

Dr. Hilliard Wood, Nashville, read a paper entitled "Treatment of Blood Stream Infection with Mercurochrome."

These two papers were discussed together by Drs. George R. Livormore, Memphis; E. T. Newell, Chattanooga; T. D. Moore, Memphis; William Litterer, Nashville; R. G. Reaves, Knoxville; Carl Crutchfield, Nashville, and in closing by Dr. Cowden and Dr. Wood.

Dr. Howard King, Nashville, read a paper entitled "Ringworm of the Feet." Discussed by Dr. C. H. Heacock, Memphis, and in closing by Dr. King.

Dr. John B. Steele announced that the first meeting of the House of Delegates would be held at 2:00 p.m., and urged all the members of the Association to register for the complimentary banquet to be given at the Hotel Read on Wednesday evening by the Chattanooga and Hamilton County Medical Society.

As this completed the program for the morning the meeting was declared adjourned at 12:30 to reconvene at 2:00 p.m.

AFTERNOON MEETING

The afternoon meeting was called to order at 2:15 by the president, Dr. E. R. Zemp, Knoxville.

The following papers were read as a symposium on "Genito-Urinary System":

Dr. George R. Livormore, Memphis: "Symptoms Referable to the Genito-Urinary System."

Dr. Perry Bromberg, Nashville: "Hematuria: Its Significance."

Dr. Tom R. Barry, Knoxville: "Ureteral Stricture."

C. F. Anderson, Nashville: "Hydronephrosis."

Russell A. Hennessey, Memphis: "Early Diagnosis of Ranel Tuberculosis."

These five papers were then discussed together by Drs. John R. Caulk, St. Louis, Mo.; W. D. Haggard, Nashville; T. D. Moore, Memphis; H. C. Gayden, Nashville; G. M. Roberts, Chattanooga; Pennington, Nashville; and in closing by Dr. Livermore, Dr. Barry and Dr. Hennessey.

As this completed the program for the afternoon the meeting was declared adjourned at 4:30, to reconvene at 8:00 p.m.

FIRST DAY

EVENING MEETING

The evening meeting was called to order at 8:15 by Vice-President, T. B. Yancey, Kingsport.

Dr. E. R. Zemp, Knoxville, presented the Presidential Address, entitled "The Decline of Prestige in the Medical Profession."

Dr. John R. Caulk, St. Louis, Mo., presented a paper entitled "Progress in the

Dr. John R. Caulk, St. Louis, Mo., presented a paper entitled "Progress in the Surgery of Prostatic Obstruction: Remarks on the Author's Punch Operation." (Lantern demonstration.)

Dr. William D. Haggard, Nashville, presented a paper entitled "A Discussion of the Surgical Cure of Gastric and Duodenal Ulcer." (Lantern demonstration.)

None of these papers was thrown open for discussion and the meeting was declared adjourned at 9:45, to reconvene at 9:00 a.m. Wednesday.

SECOND DAY

WEDNESDAY, APRIL 13, 1927

MORNING MEETING

The morning meeting was called to order at 9:30 by the Chairman of the Committee on Clinics, Dr. S. S. Marchbanks, Chattanooga.

The following Dry Clinics were presented.

Dr. E. Dunbar Newell: "Diagnosis of Bone Sarcoma." (Lantern slides.)

Dr. Stewart Lawwill: "Interesting Eye Cases and Focal Infection."

Dr. J. L. Bibb: "Ephedrin in Bronchial Asthma."

Dr. C. Holtzclaw: "Two Cases of Goiter."

Dr. J. B. Haskins: "Two Spleen Cases (1) Movable Spleen; (2) Splenic Abscess."

Dr. S. S. Marchbanks: "An Anomaly." (Lantern slides.)

Dr. Murray B. Davis, Nashville, presented a paper entitled "Treatment of Extensive Burns, with Special Reference to the Tannic Acid Treatment. Report of Twelve Cases." (Lantern demonstration.) (No discussion.)

Vice-President J. L. Dunavant, Henning, now took the Chair.

Dr. T. D. McKinney, Nashville, presented a paper on "Surgery of Brain Tumors." (Lantern demonstration.) Discussed by Drs. Battle Malone, Memphis; John A. Witherspoon, Nashville; Hayes, Memphis; and in closing by Dr. McKinney.

As this completed the program for the morning the meeting was declared adjourned at 12:25, to reconvene at 2:00 p.m.

SECOND DAY

AFTERNOON MEETING

The meeting was called to order at 2:20 by the President, Dr. E. R. Zemp, Knoxville.

Dr. W. C. Dixon, Nashville, read a paper entitled "Hemolytic Jaundice." Discussed by Dr. Lyle Motley, Dyersburg, and in closing by Dr. Dixon.

Dr. E. T. Newell, Chattanooga, read a paper entitled "Treatment of Cancer of the Breast." Discussed by Drs. C. N. Cowden, Nashville; C. B. Crittenden, Chattanooga; and in closing by Dr. Newell.

At this time the President called on Dr. C. N. Cowden for a report from the Hospital Committee of the House of Delegates.

Upon motion regularly carried the report was ordered received and filed.

Dr. H. M. Tigert, Nashville, presented a paper entitled "Significance of Uterine Hemorrhage." Discussed by Drs. Lyle B.

West, Chattanooga; E. T. Newell, Chattanooga; and in closing by Dr. Tigert.

Dr. Lucius E. Burch, Nashville, presented a paper entitled "Discharges from the Vagina other than Bloody." Discussed by Drs. Lyle B. West, Chattanooga; C. N. Cowden, Nashville; and in closing by Dr. Burch.

Dr. J. P. Baird, Dyersburg, read a paper entitled "Uterine Injuries Accompanying Childbirth." Discussed by Drs. K. S. Howlett, Franklin; H. D. Gehrken, Guild; and in closing by Dr. Baird.

Dr. W. M. McCabe, Nashville, read a paper entitled "Endo-Herniorrhaphy for Olique Inguinal Hernia." Discussed by Dr. C. S. McMurray, Nashville, and in closing by Dr. McCabe.

Dr. A. H. Lancaster, Knoxville, read a paper entitled "Sporotrichosis: Report of a Case with Marked Bone Involvement." Discussed by Dr. H. C. Long, Knoxville, and in closing by Dr. Lancaster.

As this completed the program for the afternoon the meeting was declared adjourned, to reconvene at 9 a.m. Thursday.

THIRD DAY

MORNING MEETING

The meeting was called to order at 9:15 by the President, Dr. E. R. Zemp, Knoxville.

Dr. W. T. Black, Memphis, presented a paper entitled "The Sedimentation Test in Gynecology." Discussed by Dr. Black.

Dr. E. Dunbar Newell, Chattanooga, presented a paper entitled "A Resume of Ten Years Personal Experience in the Treatment of Cancer of the Uterus with Radium." Discussed by Dr. W. T. Black, Memphis, and in closing by Dr. Newell.

At this point the President read telegrams from Dr. Frank Ward Smythe and Dr. J. A. Crisler expressing their regret that they were unable to attend the meeting.

Dr. William Britt Burns, Memphis, presented the following report from the House of Delegates:

Dr. Burns: The House of Delegates has delegated me to present the report of the result of the nominations and elections for the ensuing year:

President: Dr. Battle Malone, Memphis.

Vice-President, West Tennessee, Dr. Lyle

Motley, Dyersburg.

Delegate A. M. A.: Dr. H. B. Everett, Memphis (one year); Alternate, Dr. Robin Harris, Memphis (one year).

Vice-President, Middle Tennessee, Dr. W. W. Porter, Springfield.

Delegate A. M. A.: Dr. John A. Witherspoon, Nashville (two years); Alternate, Dr. T. D. McKinney, Nashville (two years).

Vice-President, East Tennessee, Dr. George E. Wilson, Rockwood.

Trustee: Dr. Robert B. Wood, Knoxville.

Delegate A. M. A.: Dr. L. L. Sheddan, Knoxville (three years); Alternate, Dr. J. V. Hodge, Kingsport (three years).

Speaker of the House: Dr. C. N. Cowden, Nashville.

The President requested Drs. Black and Newell to conduct Dr. Malone to the platform, and said:

Permit me to congratulate you. I hope you will make a better President than I did.

Dr. Malone: That would be impossible. (Applause.) I am deeply grateful for this evidence of your partiality. The chief feeling in my heart at present is regret that I have not done more in my life to make me feel that I merit this honor. I do not feel that I deserve it, but will promise to serve you to the best of my ability. (Applause.)

The scientific program was then resumed.

Dr. Robert B. Wood, Knoxville, presented a paper entitled "Charity and Eugenics." (No discussion.)

Dr. H. E. Goetz, Knoxville, read a paper entitled "Insanity: A Plea for its Prevention." Discussed by Drs. R. E. Lee Smith, Knoxville; Hayes, Memphis; John A. Witherspoon, Nashville; J. W. MacQuillan, Chattanooga; E. R. Zemp, Knoxville; and in closing by Dr. Goetz.

Dr. Marvin Haygood, Knoxville, presented a paper entitled "The Doctor of Yesterday, Today and Tomorrow." (No discussion.)

President Malone: Gentlemen, this brings to a conclusion the scientific program for this meeting. If there is no business, and no further communication from the House of Delegates, I will declare the meeting adjourned sine die.

MINUTES OF THE EYE, EAR, NOSE AND THROAT SECTION CHATTANOOGA, 1927

MONDAY, APRIL 11

The meeting of the Eye, Ear, Nose and Throat Section was called to order on Monday, April 11, 1927, at 9:15 A.M. by the Chairman, Dr. A. B. Dancy, Jackson.

On motion duly made and seconded it was voted that the reading of the minutes of the previous meeting be dispensed with.

Drs. E. C. Ellett and R. O. Rychener, Memphis, presented a paper entitled, "Keratoconers: A Resume with a Report of Seven Cases." Discussed by Drs. E. White Patten, Chattanooga; E. B. Cayce, Nashville; C. S. Savage, Nashville; R. H. Newman, Knoxville, and R. O. Rychener, Memphis.

Dr. W. W. Potter, Knoxville, presented a paper entitled "Brain Abscess with Report of Cases." Discussed by Drs. Hershell Ezell, Memphis; Hillard Wood, Nashville; W. L. Simpson, Memphis; R. G. Reaves, Knoxville; F. E. Hasty, Nashville; A. W. Harris, Nashville; E. B. Cayce, Nashville, and W. W. Porter, Knoxville.

Dr. Robin Harris, Memphis, presented a paper entitled, "Infection in the Nose, Throat, and Mouth as a Cause of Disturbances of the Lower Bowel: Report of Cases." Discussed by Drs. R. G. Reaves, Knoxville; Stewart Lawwill, Chattanooga; H. E. Christenberry, Knoxville; W. L. Simpson, Memphis; J. L. Jelks, Memphis; Robert Sullivan, Nashville; J. M. Hogshead, Chattanooga, and Robin Harris, Memphis.

Dr. Frederick E. Hasty, Nashville, presented a paper entitled, "Chronic Paranasal Sinus Disease (with lantern slides)." Discussed by Drs. Stewart Lawwill, Chattanooga; F. E. LeJeune, New Orleans, La.; and F. E. Hasty, Nashville.

Dr. Edwin D. Watkins, Memphis, presented a lantern slide demonstration of "Anatomical Studies." Discussed by Drs.

Willard Steele, Chattanooga; C. S. Savage, Nashville, and Edwin D. Watkins, Memphis.

The Chair announced the appointment of the Committee on Nominations as follows:

Dr. E. B. Cayce, Nashville.

Dr. Frederick E. Hasty, Nashville.

Dr. Edwin D. Watkins, Memphis.

REPORT OF THE NOMINATING COMMITTEE

Dr. E. B. Cayce made the following report for the Nominating Committee:

Chairman: W. L. Simpson, Memphis.

Vice-Chairman: Robert Sullivan, Nashville.

Secretary: Stewart Lawwill, Chattanooga.

On motion duly made and seconded it was voted that the report be accepted and the election be made unanimous.

Dr. W. L. Simpson: I certainly appreciate this honor. I think that this is about the greatest honor that one can get and we should appreciate it. I will certainly do the best I can to further the interests of this Society and make it a big success. I will try to do as well next year as we are doing this year.

Dr. Robert Sullivan: I wish to thank you very much for this. If you really knew the situation in my home town of Nashville it would be laughable. This is the third vice-presidency that I have been elected to this year. I am indeed grateful.

Dr. Stewart Lawwill: I do not consider it an honor; I have had too much trouble trying to help out the old secretary get up a program. I will consider it an honor, however, if next year you gentlemen will come in with your papers next year. I appreciate it and will do everything possible to make the meeting a success.

Meeting adjourned at 12:30.

EVENING SESSION

Following the Banquet the Evening Session was called to order by the Chairman, Dr. W. L. Simpson.

Dr. A. B. Dancy, Jackson, presented the "Chairman's Address."

Dr. M. F. Arbuckle, St. Louis, Mo., presented a paper entitled, "Oto-Laryngological Aspects of Diseases of Children." Discussed by Drs. J. L. Jelks, Memphis; R. G.

Reaves, Knoxville, and M. F. Arbuckle, St. Louis.

Dr. F. E. LeJeune, New Orleans, La., presented a paper entitled, "Some Phases of the Lynch Operation."

At the close of the program Dr. Herschel Ezell moved a rising vote of thanks to Dr. Arbuckle and Dr. LeJeune for their excellent papers. Motion second and carried.

Meeting adjourned at 8:45 P.M.

MINUTES OF THE FIFTH ANNUAL SESSION OF THE TENNESSEE STATE ASSOCIATION OF RAILWAY SURGEONS

MORNING MEETING

The first meeting was called to order at 10:00 A.M., Monday, April 11, 1927, at the Hotel Patten, Chattanooga, Tennessee, by the Chairman, Dr. A. F. Richards Nashville.

The Secretary, Dr. H. B. Everett, Memphis, read the minutes of the fourth annual session, which were accepted as read.

The Secretary brought up the matter of the former records of the Association, and stated that he had secured a loose leaf minute book and had all the former minutes copied and placed in this book, with a copy of the Constitution and By-Laws and mailing list of the members, for permanent record.

Dr. Duncan Eve, Jr., moved that a vote of thanks be extended to Dr. Everett for his services in this respect.

Motion seconded and unanimously carried.

The Chairman announced that only one of the gentlemen on the morning program had arrived, and asked for an expression of opinion from those present in regard to adjourning until afternoon.

Dr. Duncan Eve, Jr., expressed the opinion that the meeting was called for the wrong day. He felt that it would be better to have fewer papers and have the meeting on the morning of the first day of the ses-

sion of the Tennessee State Medical Association.

Dr. Eve moved that a committee be appointed to meet with a similar committee from the Section on Eye, Ear, Nose, and Throat, to formulate a plan to submit to the House of Delegates.

Motion seconded by Dr. E. D. Newell, and after some discussion put to a vote and unanimously carried.

The Chairman appointed Dr. Eve and Dr. Everett as a committee to confer with representatives from the Section on Eye, Ear, Nose and Throat, to formulate a plan to present to the House of Delegates at the meeting on Tuesday.

Dr. J. T. Moore moved that Dr. Eve's paper be postponed until afternoon and that the Association adjourn until 2:00 P.M.

Motion seconded by Dr. Officer and unanimously carried.

Adjournment at 10:20 A.M.

AFTERNOON MEETING

The afternoon meeting was called to order at 2:10 by the Chairman, Dr. A. F. Richards, Nashville.

Dr. Duncan Eve, Jr., Nashville, presented a paper entitled "Fractures of Elbow." Discussed by Drs. C. D. Robins, Gallatin; J. T. Leeper, Lenoir City; B. S. Rhea, Lebanon; E. Dunbar Newell, Chattanooga; J. S. Campbell, Lebanon; A. F. Richards, Nash-

ville, and in closing by Dr. Eve.

Dr. A. F. Richards requested Secretary Everett to take the Chair while he read his Chairman's Address, entitled "Railway Health Inspection."

Contrary to custom, this address was thrown open to discussion and was discussed by Drs. J. T. Leeper, Lenoir City; J. S. Campbell, Lebanon, and T. H. Woods, Bellbuckle.

Dr. T. H. Woods moved that the association go on record as endorsing the paper of Dr. Richards, and that the matter be referred to the Chief Surgeon of each road operating in the State of Tennessee, for his recommendation, if he thought best, to the proper authorities looking toward the consummation of a sanitary department for the railway.

Motion seconded and carried.

Dr. E. Dunbar Newell, Chattanooga, addressed the Association on "Infections of the Hand," illustrated by photographs and charts. Discussed by Drs. Duncan Eve, Jr., Nashville; E. T. Newell, Chattanooga; J. T. Leeper, Lenoir City; and in closing by the essayist.

As the other essayists had not yet arrived the Association went into business session.

The question of a change of meeting time was again discussed by Drs. E. T. Newell, Duncan Eve, Jr., H. B. Everett, J. T. Leeper, E. Dunbar Newell, A. F. Richards, J. T. Moore.

Dr. H. B. Everett moved that the Association recommend to the House of Delegates that its meeting be held on the morning of the first day of the general meeting, beginning at 8:00 and ending at 11:00. If this did not meet with the approval of the House of Delegates the Chairman and Secretary would arrange the program as before, until other plans could be made.

Motion seconded and carried.

ELECTION OF OFFICERS

The following gentlemen were elected as officers of the Association for the ensuing year:

Chairman, H. B. Everett, M.D., Memphis.

Vice-Chairman, Duncan Eve, Jr., Nashville.

Secretary, A. F. Richards, M.D., Nashville.

Delegate to American Association of Railway Surgeons, Dr. E. T. Newell, Chattanooga.

Alternate, Dr. Wood, Winchester.

Dr. Everett expressed his appreciation of the honor shown him and said he would do everything possible to increase the attendance and keep the organization intact.

Dr. Duncan Eve, Jr., and Dr. Richards expressed their thanks and promised their support.

As this completed the business of the Association the meeting was declared adjourned at 4:15 P.M.

TENNESSEE STATE MEDICAL ASSOCIATION HOUSE OF DELEGATES

The first meeting of the House of Delegates was called to order at 2:15 P.M., April 12, 1927, by the Speaker of the House, Dr. H. B. Everett, of Memphis.

THE SPEAKER: If there are any delegates who have not received their badges the Credentials Committee will be glad to wait on them.

DR. Z. L. SHIPLEY, Cookeville: In collecting the reports for the Fourth District, I had a communication from Sumner County that the Secretary was dead and for that reason there has been no delegate certified from that county. Dr. C. D. Robbins is here. I wonder if he could not be seated.

DR. A. F. RICHARDS, Sparta: Dr. Robbins is the duly elected alternate from that county; we will issue him a badge.

THE SPEAKER: The next order of business is the roll-call of the delegates by counties. I will ask Dr. A. F. Richards, Chairman of the Credentials Committee, to call the roll.

Dr. Richards then read the roll-call.

THE SPEAKER: The delegates present have been seated. There is a quorum present and we shall proceed to business. The first order of business will be the reading of the minutes of the previous meeting.

THE SECRETARY: It has been customary to offer as the minutes of the last meeting the minutes as published in the April issue of the Journal.

DR. W. K. SHEDDAN, Columbia: I move that the reading of the minutes be dispensed with and the minutes as published in the April issue be adopted. (Motion seconded and carried.)

THE SPEAKER: The next order of business is the selection of a Nominating Committee by the delegates from the three grand divisions of the state. It has been customary in the past for the House of Delegates to adjourn for a few minutes to allow the delegates from each grand division to hold their caucus and bring in their nominations for the three men to represent their section of the state on the Nominating Committee. Each grand division is entitled to three representatives, no two of whom shall be from the same county. This Committee is to hold as many meetings as is necessary and they are not to make their report until Thursday morning. You are to keep your deliberations within your Committee. You may, however, discuss the various officers with any member you see fit but bear in mind that you are to select officers who will fill their respective places best for the good of the Society. The House will be adjourned. (The House then adjourned for ten minutes.)

The House was then called to order and the following committees were announced:

East Tennessee: K. C. Copenhaver, Knoxville; H. L. Fancher, Chattanooga; T. B. Yancey, Kingsport.

Middle Tennessee: C. F. Anderson, Nashville; W. K. Sheddan, Columbia; K. S. Howlett, Franklin.

West Tennessee: J. D. Brewer, Dyersburg; W. B. Burns, Memphis; W. C. Duckworth, Jackson.

THE SPEAKER: We have with us our President who desires to make some announcements. We will be glad to hear from Dr. E. R. Zemp.

DR. E. R. ZEMP: There are several matters concerning the Tennessee State Medical Society that have been on my heart and on my mind for the past year and I perhaps realize more thoroughly during my year in the President's chair than ever before that there are certain necessary changes that should be made or wisely carried out in this Association if we are to go forward and not backward.

In the first place, I think we all realize that we are nearing a crisis of some kind or other and to my mind we are sitting at the foot of a volcano whose rising smoke and low rumblings indicate that in a very short time we are going to be swept by an overflow of lava into a veritable hell of communism and socialism, that needs very little interpretation. The medical profession of today is being handicapped and annoyed by various laws in the first place that do not by any means represent the sentiments of the people but for various reasons and through the exercise of great diligence by certain societies these laws are being fastened on us until we are being hog-tied and carried to market and sold at any price they wish to sell us for. As a member said to me last night, "We are not drifting into state medicine but we are rushing into it." If the medical profession does not awaken not only collectively but also individually, we are going to wake up and find ourselves in a dilemma which, to say the least, will be very embarrassing. The medical profession as a whole on any question of this kind seems to be suffering from general apathy and what it takes to waken us from this general apathy is a stimulus of some kind that will come to us regularly so that we will ever be kept on our toes and on our guard for just such calamities that are about to befall us.

Under present conditions, and I wish to emphasize very strongly, that I am criticizing conditions and not persons, it is absolutely impossible for any man, I care not who he be, to carry

out the business of this Association as a side issue. The only way that the business of this Association can be carried out is by your full-time Secretary-Editor. We cannot carry it on as a side issue. It has grown too large, the work is too strenuous, and it will take a mighty big man to carry it on as a full-time secretary. I urge on you to please make whatever changes are necessary to give us a full-time Secretary-Editor so that the work of the Association may be his sole aim and purpose, so that it may be carried on diligently and revive the medical profession which seems to have waned throughout the entire state and to encourage the various members of the Society who need encouragement and let us have each month a live, active, spicy Journal that will bring us good cheer and stimulate us to better work and more careful work and that will cause us continually to be on our guard for the pitfalls that surround us.

How are we going to get that? We can only get that by a competent Board of Trustees, a Board of Trustees who are given the power to conduct the policy of the medical journal; not only to conduct the policy of the medical journal but also the power to hire and to fire. What value is a Board of Trustees that has not that power? They are mere figureheads; they are of absolutely no value. You might as well not appoint them. Unless they have some authority, unless they can dictate the policy of the medical journal, let us do away with them. It is embarrassing to them and it is obnoxious to the Association.

Then again, much fault is being found with the Legislative Committee, but do not blame the Legislative Committee. They are not at fault. It is the Association's fault. There is no law which says that the members of the Legislative Committee shall be appointed from each district of the state. They should not be, but what I am arguing for, and what I hope you will do, is that the Legislative Committee shall be appointed not for one year but for an indefinite period, for the simple reason that there is no doctor who can step into that Legislative Committee and do any work that is worth anything. It takes a year to get acquainted with the work and it takes him a year to know what he is trying to do. If you change them every year, you will never get a Legislative Committee that is worth a cent to you. I know that by experience. We put men on the Legislative Committee every year or two and they do not realize the work they have to do. They do not know the ropes, so to speak. They do not know how to get into the legislature to get results. When we appoint our Legislative Committee let us not appoint them for one year but appoint them indefinitely. Do not appoint them from the different districts but appoint the available men who are near the legislature, so that they can get together and do what should be done

in the legislature. As long as you appoint them from all over the state you will never have a legislative committee that will amount to anything.

Lastly, I think we should have a fund, by special assessment or otherwise, in order that we can bear the expenses not only of this Legislative Committee but of the lobbyists to put these measures over in the legislature. There is no business organization in the world that will try to go to Nashville to put a bill over without money. We are not the equal in organization to these business houses and the men who go down there should be paid. We should have a special fund for legislative and educational purposes so we will have some one down at the legislature or at Nashville to get over these bills which we wish. In the near future we must get some bills through, because if we do not we are slowly losing ground and before long it will be too late.

These are the points I wish to impress on you. I believe they are the best for our Association.

DR. J. L. JELKS, Memphis: Would it be out of order to ask that the President's recommendations be typewritten so that the House of Delegates can study each recommendation?

DR. C. S. COWDEN, Nashville: Are these recommendations open for discussion?

THE SPEAKER: It is customary to follow our regular order of business. That is a matter that should come up under the head of new business. The next order of business is the report of the Secretary.

SECRETARY'S REPORT

To the House of Delegates of the Tennessee State Medical Association:

This meeting marks the ninety-seventh mile post of the existence of the Tennessee State Medical Association and the ninety-fourth annual session.

At the outset I would state that the work of the office of secretary-editor has grown to such proportions that I feel in justice to myself and to the Association—if the Tennessee Medical Association is going to keep abreast of the work being done in other state associations and which should be done by our Association—I must request that the nominating committee not consider me as eligible to continue in the office which I now occupy.

It is with pardonable pride that I would call your attention to the fact that during the four years of my incumbency the cash net assets of the Association has been more than doubled and that we have on hand, as will be seen from the Treasurer's report, as of March 31, 1927, a balance of \$17,305.55. The membership has steadily but slowly increased, notwithstanding the dearth of physicians in rural communities, until at the present time we have on our books a paid-up membership of 1548.

The makeup of the Journal has been changed until it compares favorably with any state medical journal in the country and in this connection I

regret to say that on account of repeated illnesses that I have been unable to get the Journal out regularly.

It may have been observed by some that the Constitution and By-Laws which were adopted in 1925 were not put in pamphlet form and distributed to the members. This was deferred because Dr. L. L. Sheddman of Knoxville, introduced an important amendment, which I shall refer to later in this report, and which should be incorporated, if adopted, when the Constitution and By-Laws are put in a permanent form. However, the Constitution and By-Laws as adopted were published in the December 1925 issue of the Journal.

I would call your attention to the fact that nothing has been done in preparation for our centennial celebration except that Dr. Duncan Eve, Sr., has the manuscript of the history of the Association, which was written by our deceased colleague, Dr. Deering J. Roberts. It is now five years since this movement was initiated by Dr. Olin West, Secretary of the American Medical Association, and only three years remain to perfect the plan.

At the meeting last year in Memphis the nominating committee did not bring in any nominations for delegates to the American Medical Association. It is the duty of this House to nominate three delegates to serve at the coming meeting of the American Medical Association which meets in Washington, D. C., next month.

At the ninety-third annual session the House of Delegates, upon the strong urgency of the then president, Dr. W. C. Dixon, and myself, a committee consisting of your speaker, Dr. H. B. Everett, Dr. S. R. Miller and myself were appointed to select a person to carry out the graduate medical instruction and periodic health examination outlined at the time. The burden of this work was, of course, left to me and while I sought diligently, interviewing personally seven persons, I was unable to find one whom I thought suitable or who was willing to attempt the work. I also wrote Dr. Olin West, Secretary of the American Medical Association, and he interviewed several but was unable to interest anyone at a salary which the Association could afford to pay.

I would call the nominating committee's attention to the fact that the councillors of the second, fourth, sixth, eighth and tenth district expire with this meeting.

At the meeting last year Dr. L. L. Sheddman of Knoxville, introduced the following amendment to the Constitution:

"The Secretary of this Association shall devote his whole time to the interest of the State Association. He shall be Editor of the Journal and shall visit each councillor district at least once a year, and oftener if advisable and assist the Councillors

in organizing unorganized counties and use every means possible to promote the interests of the State Association. Should the Secretary and Councillor deem it wise to organize two or more counties into one society they shall have a right to take such action and such societies shall be recognized by the State Association. His salary shall be _____ dollars as may be determined by the Trustees of the Journal or by the House of Delegates.

Sec. 5. The Secretary may or may not have been a member of the Association or may or may not be a graduate in medicine."

It is published in due form in the April issue of the Journal and is now before you for your consideration.

In conclusion I want to again extend my unstinted praise of my assistant, Mrs. Frances P. Boner, for the manner in which she has conducted her duties in the office. I am frank to admit that without her assistance it would have been impossible for the office to function.

Respectfully,

J. F. GALLAGHER,

Secretary.

DR. L. L. SHEDDAN, Knoxville: I move that the Secretary's report be received and spread on the minutes. (Motion seconded and carried.)

THE SPEAKER: The next order of business is the Treasurer's report.

REPORT OF THE TREASURER

Dr. J. O. Manier

Dr. J. O. Manier, Treasurer, Tennessee State Medical Association, Nashville, Tennessee.

Dear Sir: Pursuant to engagement, we have made the annual audit of the cash receipts and disbursements of the Tennessee State Medical Association as disclosed by the Cash Book and cancelled checks kept in the office in Nashville for the fiscal year from April 1, 1926, to March 31, 1927, inclusive, and submit this report showing the receipts and the origin, and disbursements and the purpose, and presenting statements of assets on hand at close of March 31, 1927, as verified by us.

Except for the verification of the funds, or assets on hand at March 31, 1927, our examination and report is concerned exclusively with cash transactions, and no accrued items, either receivable or payable, have been considered.

Funds on Hand—Schedule A

Funds on hand March 31, 1927, consist of the bank balance of \$6,805.55 and mortgage loan 6 per cent notes of \$10,500.00, making total assets of \$17,305.55, which is an increase of \$2,474.87 over the assets of March 31, 1926, being the excess of the current year's receipts over the current year's operating disbursements, constituting the year's net surplus.

The bank balance was verified from the bank's statement and reconciled to the book balances.

The mortgage loan notes were verified by inspection of the notes.

A separate statement is shown for the Medical Defense Fund, which has increased from \$642.00 at the beginning of the year to \$1,103.26 at the end of the year.

Receipts and Disbursements

Exhibits A-1, A-1-a, and A-1-b

The detail of the total receipts of \$11,668.65 and the total disbursements of \$11,693.78 are shown on Exhibit A-1 and supporting Exhibits. All receipts were traced to the bank as deposits and all disbursements were found to be represented by checks properly signed and endorsed.

The statement of Receipts and Disbursements for the Medical Journal show disbursements to exceed receipts by \$1,204.24.

The figures are included in statement of Receipts and Disbursements, Exhibit A-1.

The additions and forwardings of the Cash Book were verified, and the cancelled checks were found correctly entered therein, and in our opinion, the cash transactions are correctly reflected in the statements of this report.

Respectfully submitted,

HOMER K. JONES AND COMPANY.

By Robert Hale Jones,

Certified Public Accountant.

Nashville, Tennessee, April 9, 1927.

STATEMENT OF FUNDS ON HAND

MARCH 31, 1927

In Bank:	
Balance in bank per audit report of March 31, 1926	\$6,830.68
Deduct: Excess of disbursements over receipts, Exhibit A-1	25.13

Bank balance, March 31, 1927, Exhibit A-2	\$6,805.55
(Regular Fund	\$5,702.29)
(Medical Defense Fund	1,103.26)

Invested:

Mortgage Loan 6% Notes:

Date	Maker	Due	Amount
7-1-25	Morton Tyree	7-1-28	2,100.00
4-1-25	Adele Morton		
	Ridley et ux	4-1-28	2,500.00
5-1-25	P. T. Gibson		
	et ux	5-1-28	1,700.00
5-1-25	W. H. Jackson		
	et ux	5-1-28	1,700.00
6-1-26	S. H. Dillard		
	et ux	6-1-29	2,500.00

Total invested March 31, 1927-----\$10,500.00

Assets, March 31, 1927 -----\$17,305.55

STATEMENT OF RECEIPTS AND DISBURSEMENTS

April 1, 1926, to March 31, 1927, Inclusive

Receipts

From Dues	\$ 6,366.00
Medical Defense	1,557.21
Advertising	3,115.44
Interest on investments	630.00

Total Receipts, Exhibit A-1-a-----\$11,668.65

Disbursements

Medical Defense, Exhibit A-1-b-----	\$1,095.95
Medical Journals:	
Printing 12 issues -----	\$3,000.00
Cuts and photos -----	83.50
Press Clipping Service----	36.00
Postage -----	200.18— 3,319.68
1926 Convention Expense:	
Medical Reporter -----	507.95
Programs -----	226.00
Badges -----	67.06
Expense of Secretary and Asts. Secretary -----	127.66
Expense—Rwy. Surgeons----	8.25— 936.92
1927 Convention Expense:	
Buttons -----	32.68
Expense of Sec'y to Chatt. -----	15.48— 48.16
Salaries:	
Dr. J. F. Gallagher, Sec.---	1,500.00
Dr. J. O. Manier, Treas.---	200.00
Mrs. Frances P. Boner, Assistant -----	1,200.00— 2,900.00
Legislative Committee Expense -----	50.00
Delegates (3) to A. M. A. Convention, Exp. Allow. -----	150.00
Expense to attend Trustees meeting----	50.05
Office Rent -----	220.50
Stationery, Print. and Office Supplies----	152.95
Postage -----	60.00
Telephone -----	59.23
Stenographic work -----	40.25
Auditing -----	25.00
Treasurer's bond -----	25.00
Moving expense -----	19.15
Towel service -----	12.00
Dues—refunded -----	2.00
Miscellaneous -----	13.61
Accrued interest on mortgage notes purchased -----	13.33

Total Operating Disbursements -----\$9,193.78

Net Surplus for year -----\$2,474.87

Investment:

Mortgage Notes of S. H.

Dillard and wife -----\$2,500.00

Total Disbursements -----\$11,693.78

Excess of Disbursements, to Schedule A--\$ 25.13

STATEMENT OF RECEIPTS

April 1, 1926, to March 31, 1927, Inclusive

1926	Dues	Medical Defense	Adver- tising	Investment Interest	Total
April ----	\$ 988.00	\$ 158.00	\$ 230.25	-----	\$ 1,376.25
May ----	488.00	77.00	181.20	-----	746.20
June ----	76.00	10.00	277.00	-----	363.00
July ----	44.00	286.21	250.77	\$240.00	473.98
Sept. ----	64.00	10.00	18.75	-----	92.75
Oct. ----	100.00	12.00	384.15	75.00	571.15
Nov. ----	16.00	3.00	541.29	-----	560.59
Dec. ----	416.00	83.00	922.75	177.00	1,598.75
1927					
January --	1,163.00	356.00	63.20	-----	1,582.20
February --	741.00	192.00	12.80	63.00	1,008.80
March --	2,054.00	327.00	18.00	75.00	2,474.00
	\$6,366.00	\$1,557.21	\$3,115.44	\$630.00	\$11,668.65

STATEMENT OF MEDICAL DEFENSE FUND

March 31, 1927

Receipts

From Members -----\$1,557.21

Disbursements

7-2-26 Gen. W. H. Swiggart, Atty., case of Otis W. Dressler vs. R. W. Billington, M.D., and C. S. McMurray, M.D. -----\$ 25.00

7-14-26	Gen. W. H. Swiggart, Atty., case of Media Richards vs. Dr. W. D. Sumpter	25.00
10-14-26	Cornelius Wade, Atty., case of E. L. Robert vs. Mildred McAllister	50.00
12-10-26	Dr. W. H. Pistole, case F. L. M. Eatman vs. Dr. Pistole	156.30
12-14-26	Dr. S. R. Miller, expenses incurred as Chairman of Comm. on Med. Defense	25.45
1-15-27	Judge John J. Blair, case of Scott Mitchell vs. Dr. G. M. Hall	340.00
1-15-27	Dudley Porter, Atty., case of Vaughan vs. Dr. A. A. Oliver	100.00
1-15-27	Dr. A. A. Oliver case of Vaughan vs. Dr. A. A. Oliver	49.65
1-15-27	Gale Smith and Co., Appeal Bond, McAllister vs. Dr. E. L. Roberts	10.00
1-25-27	Edw. Hacker, reporter, case Cora Miller vs. Dr. W. S. Nash	50.50
2-14-27	Harry M. Adams, Atty., case Jesse Clark vs. Dr. Hendrix and Dr. M. V. Pruitt	50.00
3-17-27	David S. Lansden, Chief of Supreme Court case Mildred McAllister vs. E. L. Roberts, M.D.	214.05

Total Disbursements -----\$1,095.95

Excess of Receipts -----\$ 461.26

Balance on hand per report, March 31, 1926 ----- 642.00

Balance on hand March 31, 1927----\$1,103.26

Reconcilement of Account With American Trust Co., Nashville

Close March 31, 1927

Balance per Bank's Statement -----\$6,858.55
Less Outstanding Checks No. 134--\$3.00
Less Outstanding Checks No. 135--50.00— 53.00

Balance per Books, March 31, 1927--\$6,805.55

Distribution

Regular Fund -----\$5,702.29
Medical Defense Fund ----- 1,103.26
\$6,805.55

STATEMENT OF MEDICAL JOURNAL

Receipts and Disbursements

April 1, 1926, to March 31, 1927, Inclusive

Receipts

Advertising -----\$3,115.44

Disbursements

Printing 12 issues January through December 1926, issue -----\$3,000.00
Cuts and photographs for same ----- 83.50
Press Clipping Service----- 36.00
Postage ----- 200.18
Salary—Dr. J. F. Sallagher, 2-3rds ----- 1,000.00

Total Disbursements -----\$ 4,319.68

Excess of Disbursements over Receipts--\$1,204.24

The amounts on this statement are included in those on Exhibit A-1.

DR. J. O. MANIER: Last year as the House of Delegates will remember the question of the Medical Defense Fund in relation to the delinquent bank in Jackson was taken up and the Treasurer was instructed to reimburse Dr. Crook for whatever funds he had spent. You will remember that Dr. Crook borrowed \$1,000.00. I have written Dr. Crook on one or two occasions in reference to the status of the loan but I have never been able to get a clear idea of just what that status was. In the last letter he said he would be here and we would get together. As a result of his very unsatisfactory correspondence we have not been able to get the facts to justify our closing it up.

THE SPEAKER: It is customary to refer the Treasurer's Report to the Auditing Committee and I will appoint on that Committee Drs. K. S. Howlett, Franklin; W. B. Burns, Memphis, and B. S. Rhea, Lebanon. As the By-Laws specify, you will verify the bond, the date of bond, etc.

The next order of business is the report of Standing Committees.

REPORT OF COMMITTEE ON SCIENTIFIC WORK

Dr. J. F. Gallagher

I submit the program as published and the supplementary program that has been distributed as the report of the Committee on Scientific Work.

DR. L. L. SHEDDAN, Knoxville: I move that the report be received. (Motion seconded and carried.)

REPORT OF COMMITTEE ON MEMOIRS

Dr. J. F. Gallagher

The following members of the Tennessee State Medical Association have died during the past year:

Dr. Martin P. Boyd, Farmville, Henderson County, died April 1, 1926.

Dr. H. W. Haris, Cleveland, Bradley County, died April 6, 1926.

Dr. George W. Crosthwait, Murfreesboro, Ruthersford County, died May 31.

Dr. J. W. Sanford, Ripley, Lauderdale County, died June 25.

Dr. Wm. L. Medling, Dyer, Gibson County, died July 1.

Dr. R. H. Ward, Fowlkes, Dyer County, died September 2.

Dr. John D. Alexander, Tiptonville, Lake County, died September 10.

Dr. A. B. Ramsey, McMinnville, Warren County, died September 17.

Dr. George C. Paschall, Franklin, Williamson County, died September 22.

Dr. J. M. King, Nashville, Davidson County, died October 12.

Dr. A. B. Tadlock, Knoxville, Knox County, died November 16.

Dr. J. H. Lackey, Ripley, Lauderdale County, died November 16.

Dr. C. M. Drake, Knoxville, Knox County, died November 20.

Dr. J. W. Brandua, Clarksville, Montgomery County, died November 28.

Dr. Harrington Marr, Nashville, Davidson County, died December 14.

Dr. William T. Allen, Gallatin, Sumner County, died December 29.

Dr. John T. Altman, Nashville, Davidson County, died December 30.

Dr. J. Hugh Carter, Memphis, Shelby County, died February 8, 1927.

Dr. R. H. Milam, Lexington, Henderson County, died March 12.

Dr. H. A. Mann, Memphis, Shelby County, died March 23.

Dr. C. A. Abernathy, Pulaski, Giles County, died April, 1927.

Dr. S. W. Wooyard, Greenville, Green County, died April, 1927.

Dr. W. E. Hibbetts, Nashville, Davidson County, died April, 1927.

DR. W. C. DUCKWORTH, Jackson: I move that the report be spread upon the minutes and that we stand for one minute out of respect to our deceased members. (Motion seconded and carried.)

COMMITTEE ON MEDICAL DEFENSE

Dr. S. R. Miller

To the House of Delegates of the Tennessee State Medical Association:

Gentlemen: Your Committee on Medical Defense herewith submits the thirteenth annual report of the Association's activities in defending its members in suits for alleged malpractice.

While we have not had a greater number of suits than usual, we have had much work, and much greater expense than in former years.

On account of the fact that the record of payment of defense fees are not kept by your Committee and bills are paid through the Secretary's office, we are not able to report the receipts or disbursements of this feature of our work.

Seven of our cases have cost in the year \$1529.95, and three of these alone cost over \$1180.00. Some of this work was done one, two and three years ago, but the bills were not agreed upon or presented until this year. Thus, this year expense has fallen heavily upon us.

Our regularly retained counsel are working for a small fee for such legal talent, and we pledged to them our cordial co-operation and hearty appreciation, and prompt payment of their bills when rendered, and to make that promise good, your Chairman, as an individual, borrowed \$525.00 with \$7.00 interest, to pay two bills due, after the Secretary of the State Association reported no Medical Defense funds, and refused to use any funds of the Association for our bills.

The House of Delegates should make some provision to correct such a condition if it arises at

any future time. But for the fact that some of our funds, probably a thousand dollars or more are tied up by the receiver of the Jackson bank, a considerable part or all of which we are assured we will receive eventually, we would not have needed any borrowed money.

We think our expenses may be expected to increase some in the future. Already court reporters cost more, and there is considerable incidental expense when a suit is taken to the Court of Appeals, or Supreme Court, or both, as is being done more now than in our earlier years.

Lawyers are charging larger regular fees than they did thirteen years ago, and it would be better for us if funds could be provided to pay our counsel probably \$25.00 more for each trial. Another added expense this year is for furnishing our counsel as associate counsel in cases defended by insurance companies. In former years we have avoided such expense, but this year we have given such assistance when it was desired by our member. Such help is entirely proper, and is fully appreciated, and in our opinion, is a progressive step.

We had eighteen cases from last year. One was on docket for retirement. Two non-suits had not been barred by time limitation, and fifteen were pending for trial. Only six new suits were referred to the Committee in the year, making a total of twenty-four for the year.

The two non-suits were not revived, and are now barred by time limitation. The case on the retired docket took a non-suit, probably as the easiest way out, and our counsel thinks will never be heard of again.

Four suits were won in Circuit or higher Courts, and one other was won in Justice of Peace Court. It consumed two days, when the plaintiff took non-suit to prevent a verdict for the defendant.

Two suits were lost in one or more courts. One of these was a judgment of \$1200.00 in the Lower Court, and was affirmed in both the Court of Appeals and the Supreme Court. The other had a mistrial after two or three days trial. The second trial of four days resulted in a verdict of \$10,300.00, but the judge set aside \$9300.00, thus leaving only \$1000.00, and the plaintiff's counsel appealed, and ours did likewise.

We now have fourteen suits pending, with a mere possibility of one non-suit being revived. It is evident that these fourteen suits cannot be followed to termination on the funds now on hand if we have any, and probably not with such funds as will eventually be received from the Jackson Bank.

The successor of this Committee should be provided with all necessary funds to carry on this work properly. To make the assessment compulsory on each member would probably add only \$200.00 or \$300.00, and would probably add suits in greater proportion. To increase the defense

fee to \$1.50 would meet with some opposition, especially those who need the protection most.

Until the money is received from the Jackson Bank receiver, you should authorize the Treasurer of the Association to pay all proper bills for which he has not Medical Defense funds, from the Association's general funds, and if necessary, increase the defense fee.

When the Association has an all-time Secretary, and he proves to be the right man in the right place, the Chairmanship of this Committee should be delegated to him. As that will take time, the Chairman of this Committee respectfully requests that you select someone to take up this work. Certainly thirteen years of such work should entitle him to retirement.

DR. J. O. MANIER, Nashville: If blame is due it should be properly placed. Dr. Miller stated in his report that the Secretary had refused to meet these payments when the Medical Defense funds were low. I am sure that is his idea about it because the correspondence was carried on entirely between Dr. Miller and the Secretary. As Treasurer I want to state first that it was not on Dr. Gallagher's authority that payment was refused but as custodian of public funds, I could not see any reason why I should disburse the funds of the Society put in by all the members to pay for Medical Defense, paid for by only a limited few. I think Dr. Miller is to be highly commended for his personal action in borrowing the money and certainly the Society should authorize the Treasurer in the future to make up any deficit that may occur. The reason why the Medical Defense Committee does not have money with which to meet its bills is because so many members of the State Society do not pay their dues until the last minute.

THE SECRETARY: If Dr. Miller had waited for a little while he would not have had to borrow this money. He sent me a great raft of bills and we paid as many as we had funds on hand, but as Dr. Manier said, the large counties, like Shelby and Davidson, defer sending into the office their dues and Medical Defense fees until late in the year. Dr. Miller should have said that I wrote him last week saying that I would have \$1100.00 on hand and if he would send me the bills I would pay them.

DR. J. L. JELKS, Memphis: In further substantiation of what Dr. Manier has said, this matter was taken up with me by correspondence through either Dr. Gallagher or Dr. Manier. I felt in my own mind that it would not be exactly the thing, perhaps not legal, and might jeopardize the funds of this Society, to use the general funds for paying Medical Defense bills. I wrote Dr. Manier that we were not authorized to transfer the general funds of the Society to the Medical Defense fund.

DR. H. P. LARRIMORE, Chattanooga: The

thought occurred to me that we should see that Dr. Miller receives these refunds and that we give him a vote of thanks for all his efforts. I offer that as a motion. (Motion seconded and carried.)

DR. S. R. MILLER, Knoxville: I want to provide your Committee some way in the future of taking care of such emergencies. I had given my word regarding the payment of these bills and for that reason borrowed the money. I wish instead of a vote of thanks that you would provide some way that when the Chairman is caught in this dilemma, he can O. K. the bills and send them to the Treasurer to be paid when due.

DR. J. L. JELKS, Memphis: When I was in Knoxville I talked this matter over with Dr. Miller. Though Dr. Miller should be reimbursed, unless you clothe us with the rights and privileges of taking from your general fund surely we cannot do it. If there are any funds at this time sufficient, this Society should take up this matter and reimburse Dr. Miller.

THE SPEAKER: It just occurred to me since Dr. Miller read his report that he has some fourteen or fifteen cases on hand now. Now Medical Defense funds are very low. If we should pay this account out of the general fund then we are taking the people's money paid in for dues and using them for the Medical Defense. On the other hand, we will have to meet this expense some way. It is very apparent to me that with fourteen or fifteen cases on the docket now and the Medical Defense money very low that he is not going to be in position to take care of these bills when they come due and there should be some arrangements made to pay these bills as they come in. The matter is still open for discussion. I would like to make some disposition of the report.

DR. S. H. HODGE, Knoxville: As I understand Dr. Gallagher, there are sufficient funds on hand to take care of this now. Then as I see it, the Treasurer should be instructed to take care of Dr. Miller's loan, and then this Committee and the trustees can get together and plan some way of taking care of this matter in the future. There is no objection to the Treasurer's loaning money during the year to the Committee providing it does not exceed the amount they take in each year.

THE SECRETARY: The trouble is that the Medical Defense Committee has gotten itself in a hole, that is to say, they have more suits and more expense, than the Medical Defense fee covers. The fees each year have never taken care of the bills and things have accumulated. If you go into the general fund and pay the Medical Defense bills there will be objection. Let the Medical Defense fund take care of the Medical Defense bills. The only logical thing is to either increase the Medical Defense fee or abandon the project. As Dr. Everett brought out, he has no

chance to defend those fourteen suits with what will come in in Medical Defense fees before the next year. I do not think it is sound business to take the general fund to bolster up this tottering Medical Defense.

DR. W. C. DUCKWORTH, Jackson: It looks to me as if we were accepting medical defense and not paying for it. It strikes me that the fee should be increased. What is \$2.50 to me to get medical defense? It is absolutely nothing; I think the fee should be \$5.00.

DR. J. P. TAYLOR, Wartrace: It seems to me that the medical profession generally is not awake to the importance of medical defense. I have observed that in my own community. What can strike more terror to a doctor's heart than a notice of a lawsuit for malpractice brought against him. What does \$2.00 look to him then? It looks to me as though something should be done to wake the doctors up to their interest in that as well as to the numerous other things to which our President has just referred. I believe that the Medical Defense fee ought to be included in our membership fee. Every man who is a member of the State Medical Association ought to be pleased to contribute \$2.00 to pay for defense of his fellows.

DR. L. L. SHEDDAN, Knoxville: I happen to be one of those unfortunate victims, having been actually attacked not only with a malpractice suit but a libel suit for \$100,000. I have contributed \$1.00 every year since the Medical Defense was started. In this suit against me I have not asked the Association to furnish me aid because the insurance company will do that, but I think as Dr. Taylor does that \$1.00 is ridiculous when talking medical defense. I think the men who are interested should not be unwilling to pay \$2.00. I fully realize with Dr. Hodge and Dr. Jelks that we cannot go into the general fund for the purpose of supplying a special fund. This particular issue must carry its own weight. If \$1.00 will not carry it, there are two ways of procedure. One is to abandon it and the other is to get enough money.

DR. J. T. LEEPER, Lenoir City: This Defense Fund should necessarily carry its own burden. I have never had a threatened suit but two men in my town have. If judgments had been returned against them, would I not have suffered a certain amount of loss? I was more subject to the liability of a suit than otherwise. A man who is a member of the State Medical Society is a member of it for two reasons and many others, for betterment to himself and what he might be able to do for the profession. If he is going to reap anything through his membership in the Association, he is going to reap some benefit to himself. I do not see why we should have several funds or accounts to take care of. I do not see why you do not make your dues enough to

take care of this part. As far as taking from one fund and putting it in another, we are all together. What is good for one is good for the profession. At the same time, I am not criticizing the officers for doing what they did. I would have done the same thing, but I do feel that this House of Delegates should place itself on record that if we are going to have medical defense it should be compulsory on every member of the State Society.

DR. S. R. MILLER, Knoxville: We are not getting anywhere as far as disposing of this is concerned. Here is an idea that I have. We have enough money, \$1100.00, to take care of our bills for a time. Suppose that this House vote a fund of \$1000.00 or \$2000.00 to the Medical Defense Committee and instruct the Treasurer to pay bills up to that amount when they get into this sort of a muddle. We may not have any more bills due for some time and we may have some more money. All of these fourteen suits will not come to trial. There are five or six we never expect to hear from. Then appoint a committee to investigate whether next year we should increase the Medical Defense fee to \$1.50 or \$2.00.

DR. E. T. NEWELL, Chattanooga: I move that we increase the dues to \$2.00. I think that is the most advisable think we can do.

THE SPEAKER: You have to offer it as an amendment.

DR. E. T. NEWELL, Chattanooga: I move an amendment to the by-laws that the Medical Defense fee be increased from \$1.00 to \$2.00.

DR. K. S. HOWLETT, Franklin: Would it make it all right to make the state dues \$6.00 instead of \$4.00?

DR. E. T. NEWELL, Chattanooga: No, there are some men who do not want to use the Medical Defense.

THE SPEAKER: You have heard Dr. Newell's amendment which has to lay on the table until tomorrow. I doubt the advisability of making medical defense compulsory. As Dr. Newell has said, there are many people who have insurance which covers this same proposition and only pay the \$1.00 to help the other fellow. I have had no suits but I have always paid my Medical Defense fee. If you increase it there are a number who will not pay a higher fee than they are now paying. However, that is a matter to come up tomorrow.

DR. J. T. LEEPER, Lenoir City: I move that the report be accepted and that Dr. Miller be reimbursed. (Seconded.)

THE SPEAKER: Dr. Miller has asked that he be extended a credit of at least \$1000.00 to carry on his operations this year. That is a loan from the point of view of the Medical Defense fund and that in case he needs it, the Treasurer is to advance him to the extent of \$1000.00.

DR. J. L. JELKS, Memphis: Do you mean

that the Board of Trustees or Treasurer should let him draw on us for that amount or that we should simply make a loan of that amount?

THE SPEAKER: As I understand it, Dr. Miller is asking for a loan providing he needs it.

DR. J. L. JELKS, Memphis: If it is a loan, all right.

THE SPEAKER: He is asking for a loan credit of \$1000.00 in case he needs it this year. If that request is allowed, you will be called upon to pay Dr. Miller's bills up to that amount providing the Medical Defense Fund is lacking.

DR. J. L. JELKS, Memphis: It is to be distinctly understood that it is a loan.

THE SPEAKER: He is requesting a loan providing he needs it to the extent of \$1000.00.

DR. L. L. SHEDDAN, Knoxville: I move you that the Trustees and Treasurer be instructed to extend Dr. Miller a loan credit up to \$1000.00 if he needs it. (Motion seconded.)

THE SPEAKER: The motion to adopt Dr. Miller's report is before the House. If the gentleman will accept Dr. Shedd's motion as an amendment, it can be acted upon; otherwise the motion to adopt Dr. Miller's report will have to be acted on first.

DR. J. T. LEEPER, Lenoir City: I accept the amendment. (The seconder also accepts.)

THE SPEAKER: The motion as amended is before you.

DR. C. N. COWDEN, Nashville: Suppose he need \$1000.00 and we loan it to him, next year he may need \$2000.00, who is going to pay it back.

THE SPEAKER: For your information, Dr. Newell just filed an amendment to the buy-laws to increase the Medical Defense fee to \$2.00.

DR. C. N. COWDEN, Nashville: You have not adopted it.

DR. S. H. HODKE, Knoxville: Let me suggest that you adopt Dr. Miller's report and defer action on the other motion until tomorrow when you have acted on the amendment.

DR. L. L. SHEDDAN, Knoxville: I withdraw the amendment.

THE SPEAKER: You can adopt Dr. Miller's report. The motion is now before the House to adopt Dr. Miller's report. (Motion carried.)

THE SECRETARY: I move we adjourn until Wednesday at nine o'clock.

WEDNESDAY MORNING SESSION

The Wednesday morning session was called to order at 9:20 by the Speaker of the House.

REPORT OF COMMITTEE ON CANCER

Dr. W. B. Burns

There has been nothing done by the Cancer Committee for the past three years. There was considerable activity some years ago in the way of showing pictures, distributing literature and holding cancer clinics and meetings over differ-

ent parts of the state. Last year the Chairman of the American Society for the Control of Cancer, Dr. Soper, went to Europe to study some work the English were doing. We got nothing from that source. Without the aid of the American Society for the Control of Cancer the State Association can do very little. The work we have been doing seems to have lagged; the profession is fed up on it. Last April in a discussion with Dr. Wild, one of the traveling secretaries of the Association, and Dr. Wood, the vice-president of the American Society for the Control of Cancer, they promised a good deal for us but did not do anything. I have had some correspondence. About the most hopeful thing is that in the last two weeks I received a letter from Dr. Soper saying they had reached the point where they could furnish some valuable literature to the profession. The agreement a year ago was they would send a handbook on cancer to every member of the profession in the state. Then they decided that was too expensive. I wrote Dr. Soper to send me 500 copies of the handbook to Chattanooga but I have not received them. That will be all we will be able to get out of the society. This handbook is well written and is the significant story of cancer. I do not know that the Cancer Committee is going to be of any great value as a standing committee for this Association. I happened to be State Chairman for the American Society for the Control of Cancer but I have not been able to get anything from them. They seem to have come into a little more money lately and will be able to do something. I wrote to Dr. Soper the early part of this year that I would not continue in that capacity without some definite steps to present to the medical profession and to the people.

DR. W. K. SHEDDAN, Columbia: I move that the report be accepted, and the Committee abolished. (Motion seconded.)

DR. W. B. BURNS, Memphis: I brought up the question as to whether the Committee should be abolished as a strong committee.

DR. H. P. LARRIMORE, Chattanooga: I would not look well to the National Society not to have such a committee. If Dr. Burns is tired we could have another committee. I think it would look better to have another committee.

DR. W. K. SHEDDAN, Columbia: I am tired of making a show. I do not believe any committee can accomplish more than Dr. Burns and I do not see much to be gained in the control of cancer.

DR. C. F. ANDERSON, Nashville: I would like to ask Dr. Shedd's if he does not think we should have a Cancer Committee. We ought to have one that works and does something. I am sure that Dr. Burns and his committee have done all they could. I would be very much opposed to abolishing the Cancer Committee. Along that

same line, I am personally in favor of keeping the same committee. They have already done part of the work and have accomplished something.

DR. W. B. BURNS: I expect the Committee ought to be continued. I hope Dr. Sheddan will withdraw that part of his motion. It may be that the Society for the Control of Cancer is now in a position to do something. The last correspondence looked that way. It may be possible to have some moving pictures or some campaign activities, but certainly this Committee has not been able to do anything, because the source of action has been elsewhere.

THE SPEAKER: The motion before the House is that this report of Dr. Burns be accepted and filed and the Committee abolished. The question has been called for. (Motion lost.)

DR. C. F. ANDERSON, Nashville: Inasmuch as most of us believe that there should be a committee, I move that the report be accepted and the Committee continued. (Motion seconded and carried.)

DR. L. L. SHEDDAN, Knoxville: Yesterday Dr. Newell made a motion that the dues be increased and the Medical Defense fee increased. The By-Laws does not state what the Medical Defense fee shall be.

THE SPEAKER: The By-Laws under Chapter VIII, Section 5, has this to say: "The Committee on Medical Defense shall consist of three members, one from East Tennessee, one from Middle Tennessee and one from West Tennessee, to be elected by the House of Delegates, so arranged that one shall be elected each year.

It shall be the duty of the Committee to manage the defense of malpractice suits against members of the Association in good standing who have paid the Medical Defense fee of such an amount as has been named by the House of Delegates."

That seems to be all that pertains to the fee that shall be paid. It seems to me that the fee may be anything that this House of Delegates elects.

DR. W. B. BURNS, Memphis: Your procedure would be to rule the amendment out of order.

THE SPEAKER: Dr. Newell's amendment is out of order.

DR. W. B. BURNS, Memphis: I move that the Medical Defense fee be \$2.00. (Motion seconded.)

THE SPEAKER: As I understand this does not apply to 1927, because there are a large number of men who have already paid for this year. This would begin in 1928.

DR. W. B. BURNS, Memphis: I will add to my motion, "beginning with the fiscal year 1928."

DR. J. L. JELKS, Memphis: This I understand is for \$2.00. I have been estimating things and Dr. Miller and I are at variance as to just how he stands on the credit side of his book. As I estimate it, if you would abolish this Medical

Defense right now it would cost the Tennessee State Medical Society at least \$1500.00 to get out of the hole. You must have all the suits now pending cared for. In addition to that, those obligations already incurred must be cared for, then all the suits that will be brought this year. This is only the beginning of the year. Then all the alleged malpractice suits brought during the year must be cared for out of this same fund. You have not the funds to protect that much. I do not believe we could lose less than \$1500.00 if we abolished this Committee right now. Now what is going to be the effect of raising the fee for Medical Defense? Perhaps some will withdraw. You are making no obligatory requirement and yet you want to protect your brother physician who will not protect himself. What are you going to do about it?

DR. L. L. SHEDDAN, Knoxville: The motion made is to increase the Medical Defense fee to \$2.00. It has been my observation in medical affairs as in practically all activities of life that the more a man pays for a thing the more he thinks it is worth. There has been some question as to whether a man will withdraw. No man is going to drop medical defense. I am heartily in favor of raising the fee to \$2.00.

DR. H. P. LARRIMORE, Chattanooga: If the speech of Dr. Jelks could be put over to the medical profession I think it would explain it to everybody.

DR. C. N. COWDEN, Nashville: We are taking up a lot of time over \$2.00. You will pay twenty dollars for insurance. I call for the question. (Motion carried.)

DR. T. B. YANCEY, Kingsport: I raised the question yesterday that was not settled of allowing the Society to loan Dr. Miller \$1000.00 for his Defense fund in case he was short.

DR. L. L. SHEDDAN, Knoxville: That was the amendment I made yesterday and withdrew. I now move that the Trustees and Treasurer be authorized to loan up to \$1000.00 to the Medical Defense Committee or any part of it that may be necessary to meet the deficit for the ensuing year. (Motion seconded.)

DR. J. O. MANIER, Nashville: Is that made in the nature of a loan to be refunded back to the general fund.

THE SPEAKER: Yes. (Motion carried.)

REPORT OF COMMITTEE ON HOSPITALS Dr. C. N. Cowden

DR. L. L. SHEDDAN, Knoxville: Dr. Cowden, Dr. West and I have this report prepared and it is rather lengthy. Dr. Cowden would like to read it before the general body. There is absolutely no action or recommendation for this House of Delegates to make, so I move that Dr. Cowden be permitted to read it before the general session. (Motion seconded and carried.)

THE SPEAKER: Dr. Cowden you may read

your report to the general session and file it with us as part of the record of the House of Delegates. I will appoint Dr. L. L. Sheddan to make the necessary arrangements to have you appear before the general body.

REPORT

In a survey made by your Committee in 1925, Tennessee had 110 hospitals, with a bed capacity of 10,507. There were 33 hospitals with less than twenty-five beds within the state at that time, with a bed capacity of 625. These hospitals were located in twenty-four counties, leaving seventy-one counties with no hospital facilities whatever. We now have in the state forty-four hospitals with less than twenty-five beds, with a bed capacity of 695, leaving only fifty-eight counties now without hospitals. This increase in the past two years, shows a steady increase in the hospitals in the rural districts.

Your Committee on Hospitals, appointed by our President, is submitting for your consideration today a report that is somewhat different from the former reports. Instead of getting the number and location of the hospitals, the amount of equipment, number of beds, etc., we want to try to do for the small rural hospital what the American College of Surgeons has done toward standardizing and improving the larger hospitals in the United States and Canada.

The hospitalization of the sick is a big problem, involving the expenditure of large amounts of money; and has become one of the necessities in our advancing civilization. Ten per cent of our population or over twelve million are annually treated in hospitals, costing upwards of a billion dollars. This public is entitled to know what they are getting in return for this huge sum of money.

Perhaps in no branch of medicine or surgery, is there being so much written about at the present time as there is upon the problems of the hospital. Societies are being organized to further the interest in them, rules and regulations adopted, standards of equipment set forth, the extent of laboratory and x-ray apparatus needed, the systems of keeping charts and case reports, all receiving the attention of our best minds.

If hospitals are good for city people, why are they not good for country people? If they are good for the business and professional man, then they must be good for the farmer. The farmer has improved roads, telephones, the radio, the electric equipments, better schools and many other advantages over the past. All of these are bringing to the farm people more contentment and are improving greatly the condition of the rural populace. The time has now come in the fulfillment of a long known need to give to the rural brothers the advantages and benefits of a good hospital. We are told by our health authorities that the rural death rate is practically

stationary at present, while the city death rate is markedly decreasing. The reason is, the poorest classes in the city are served with free clinics, dispensaries, and the benefits of the modern hospital services at their command.

We believe the time has come when both the hospital and the public health organization have a place in the welfare of the people in every rural community. To have rural hospitals there must be doctors in small towns and the scarcity of doctors in rural districts is already a menace. A survey of the United States upon this question, reveals this to be a universal cry in every state, and the shortage is becoming more acute every year. Taking the country as a whole, sixty-three per cent of the physicians are located in cities and towns above five thousand, serving less than forty-five per cent of the population, leaving about thirty-five per cent of the doctors to serve more than sixty per cent of the people. The most deplorable fact of the situation is that recent graduates in medicine are not locating in the rural communities. The trend of the young physician to the city is the result of modern medical education with its emphasis upon the diagnosis being made with the x-ray apparatus, microscopes, laboratories, etc., making it impossible for the graduate of today to locate to practice medicine where such aids are not available. We must not be satisfied with just simply training men to render medical service, but we must also provide medical plants in which these men can use and apply their knowledge of modern medicine in the treatment of diseases.

Many of our foremost medical thinkers are beginning to express the opinion that the modern education of the physician lays undue stress on the laboratory in diagnosis and neglects the study of the symptomatology of the onset and the course of the disease. One of the leading educators of the South said, "If a medical school has any real function, it is to turn out medical men who will take care of the women and children of this country, and we are not teaching medicine today that is preparing them for this work." The man in the rural district needs and requires the benefit of trained men just the same as does the city man. If the modern medical graduate won't go to the smaller towns and rural districts because of the fact that he cannot have the facilities to practice modern medicine, we will have one of two things. We will have to change our medical curriculum or revise our medical course in order that the doctors may be trained who can and will go into rural communities to practice. Many eminent educators agree that the other solution of the problem is, the erection of rural hospitals. They suggest that every community the boundaries of which may or may not be determined by the state, county, municipal or township lines should have the authority on the majority vote of the citizens

to raise funds by taxation to build, equip and maintain a community hospital.

The benefits that accrue to a rural community in having its own hospital, rather than using a distant city hospital are many. The difficulty of long transportation is overcome, much expense is saved as city hospitals are much more expensive on account of hospital supplies, expensive buildings and grounds. Having the patients nearer home where they will feel surer of a greater personal attention. Again follow-up work is made possible, as many of the patients need to be kept under general observation while convalescence is taking place after leaving the hospital.

For this rural hospital to succeed it must be an integral of the entire community. It should have the co-operation and friendly support of all. Everybody should look upon it as a place where some day they will possibly have to take some member of their family to save their health or their lives. Some prejudice and superstition in regard to hospitals still exist among a small number of uneducated people. The public should be carefully educated in favor of the hospital.

Before this hospital is undertaken or built a survey should be made by the most public spirited men in the community to determine some of the following facts: First, does the community want and need a hospital, can it obtain the support of the public? The number of inhabitants in the community where the hospital is to be located, as it requires about four to six thousand to maintain one. Then last but not least, where are the financial resources coming from, which should be sufficient not only to finance the construction of it, but assure its maintenance.

After the hospital is in operation, every effort should be made to make its availability, its benefits, and its usefulness known, especially to each uneducated citizen in its community. This plan has been put into force in many communities of different states, especially in Iowa and Indiana where it has met with marked success.

Among the things that should be pointed out that these rural hospitals bring to the community is, first they are accessible at all times to everybody. Again they increase the efficiency of the local doctors, for they cannot keep pace with the work of efficient hospitals, without they do a lot of work in their libraries. It stimulates post graduate courses and develops specialists along different lines. It unifies the profession also, because team work is the order of the day, and the pace is so rapid at the present time that few men are to be found who can at one and the same time fill all of these positions. It furnishes training to a large number of nurses that will be available in the community in which they live. The rural sanitary nurse that is soon to be a fixture in every enlightened community, they will be taught public sanitation and hygiene along with the art of pre-

ventive medicine. It is predicted by some of the enthusiasts, that the day is not far distant when we will have a system of hospitals like the system of public schools. They claim that hygiene and health are just as important and as much of an economical question as an education. Who is there that can gainsay that they are not correct?

The public should be taught if they do not know it, that the health of the community is of inestimable value, that a hospital is not a place to go to die, but it is a place where there are many improvements over the old way of home nursing, and in the way of treating midwifery and many other questions of life import. From the hospital should go out influences for the betterment of community life, more sanitary homes, better food supplies, the value of cleanliness and all things, better babies, the way to handle intelligently infectious diseases and many other valuable things pertaining to health and happiness.

There is no greater influence to be found that welds and cements the people into one common brotherhood, than the united effort to care for the sick. In a true sense our hospitals may be considered as a measure of our civilization, not only of a community or a city, but even of a people. How do we treat the sick and afflicted? Have we provided in any way to render the best service possible? In some instances I must say that the answer would cause us to hang our heads in utter shame when we realize what we have done, or what we are doing for our town or community along this line.

In order for a hospital to succeed, three different groups of vitally interested people must be banded together. Namely a body of business men, a medical staff and a hospital personnel. The first should be composed of a committee of representative men and women, who can realize the necessity of a place where the sick can obtain modern scientific treatment, and can look upon a modern hospital as one of the most vital institutions that could engage the support of any community. The staff should be a fusion of the best talent to be found in the community, organized into a definite group and willing to be spent to further the interest of the institution. Then the hospital personnel composing superintendents, nurses, orderlies, etc. All of these groups working together, the patient can be assured of an early and accurate diagnosis, a more modern and scientific treatment and an early return to health if at all possible. This is what each patient should expect to receive when entering the hospital and what they are justly entitled to.

These three groups that are necessary to every hospital should attempt to avail themselves of the minimum requirements laid down by the American College of Surgeons for the rural hospital and strive to meet them as far as possible. The public is manifesting more intelligent interest in hos-

pitals and more discriminating in the service in which they seek. The time is past when you can put up a few beds in a building and call it a hospital. The mere boarding house or hotels for the sick have been or soon will have to be transformed into real scientific institutions. The time is past when a hospital can be run without a certain amount of equipment, such as the laboratory, microscope and x-ray apparatus. These are the absolute necessities if modern medicine and surgery are to be practiced, and made available to the trusting patient. The public should be taught this fact until they would demand this equipment or go where they get the benefit of it. One of the most important factors that contributes to the success of the hospital in the small town is the Board of Trustees or Directors. Of course they should work in harmony with the other departments, co-operate with them in everything concerning the management of the affairs of the institution. They should be wide awake, public spirited men and women, and first of all filled with the zeal to learn what it takes to constitute a modern hospital. The right kind of a board with this knowledge well impressed upon them, will not stop until the means are secured to obtain the necessary equipment. The equipment and the maintenance of the larger hospitals has entailed a large amount of money, and to meet the added expense necessary for their upkeep, the hospital fees have been so increased that many self-respecting persons of moderate means, and with an inborn native pride, debars them from accepting anything that smacks of charity. They cannot secure the needed help for themselves or their dependents because of the enormous fees. This group far outnumber any class of people that go to a hospital, and they constitute the bone and sinew in any community in which they live. The pauper and millionaire are well looked after, but this large intermediate class has very little offered to them that is within their reach.

We are not saying that the cost of the large hospitals is too high priced for the service rendered, but it is too great a burden for them to willingly assume, and hence prohibitive to them. Every case that comes to a hospital does not demand all of this equipment to render satisfactory service, and we know from our daily experience that there are many cases that cannot be safely transported.

One of the first problems of the rural hospital, is, the education of the entire citizenship, and when this is accomplished, a modern equipped hospital will always be the result. Get the idea to them that this hospital is for me or mine, and the best is none too good for them. Until you can get all of these factors co-operating, your hospital will be far from the ideal. The doctors and the hospital force are already sold on the proposi-

tion, but they are handicapped in their service unless they have the aid and help of the entire citizenship. They must be educated up to the point where they are ready to spend some money, not for the sake of sweet charity, but as an investment of real worth in more ways than dollars and cents. The objections to these rural hospitals can also be pointed out. It is a fact that when these rural hospitals are opened for the treatment of patients, the mortality rate from operations begins at once to climb in many of the cases of surgery, such as gall-bladder, goiters, stomach surgery and several other of the major problems. I grant that this is true, but if you will review your early work as a surgeon, and compare it with your work of long experience, you will note a vast improvement in your mortality percentage. Granting that the rural operator will overstep his limitations and lose some cases that in the hands of more skilled operators could have been saved, the loss of a patient will cause him to begin at once just as you did to increase his knowledge and skill and will improve his mortality rate as you improved yours.

Taking into consideration, the cases he will save that could never be induced to go to the great city, he will average up in the total number of lives saved and his mortality rate will compare favorably with the average city man.

Whether it be for the better or for worse, the movement for the establishment for rural hospitals is on. There are no legal impediments, and some of the different states are enacting new laws to help in the movement. Any community may have a hospital if it really wants one. Farmers are realizing the value of hospitals and are recognizing the handicap which the absence of hospitals and doctors places upon farming communities. The hospitals when established will serve fifty million of people living in the rural district. With the establishment of these rural hospitals with the resultant aid to the return of rural doctors, the health and social phases of equality of agriculture with other industries will be near of an accomplished fact.

REPORT OF DELEGATES TO THE AMERICAN MEDICAL ASSOCIATION

THE SPEAKER: Since the last meeting there has been no meeting of the American Medical Association unless there has been some special meeting of the House of Delegates.

DR. L. L. SHEDDAN, Knoxville: No delegates were elected last year because we met after the American Medical Association met.

REPORT OF THE CHAIRMAN OF THE COUNCIL

Dr. S. R. Miller

(Dr. Miller will send this report to the Secretary.)

REPORT OF THE LEGISLATIVE COMMITTEE**Dr. H. E. Goetz**

Perhaps you do not know that the Committee has labored under considerable difficulty in that the appointment of the Committee included one Nashville man who declined to serve after the President had published the report, and left the Committee with only two members and it was rather hard to function with only two members.

You probably read the editorial in the Journal accusing the Committee of being a functionless committee. We plead guilty but not to the extent that was implied in the editorial. In the closing days of Congress there were two bills before it, one the Shepard-Towner bill and the other for the Harrison Narcotic Law. This last bill known as Seuke amendment provided that if you do not register yourself and make return on or before the thirtieth day of June you automatically become guilty of a breach of the Harrison law and your license is automatically revoked for two years. This law also would leave it open for the druggist to censure your prescriptions and decide whether you, who had seen the sick person had a right to sign a prescription for one-fourth grain of codeine and if the druggist did not want to fill the prescription he did not need to. You can see that was drastic legislation. The punishment for this violation of the law would be a fine of from one dollar to five thousand dollars with imprisonment for two years. This matter came to me very late and when there was but little time for action. However, I got in touch with Mr. Cordell Hull, the Congressman from Middle Tennessee, who in turn got in touch with the Chairman of the Ways and Means Committee of Congress in which Committee this bill had been reported for passage. It had previously been read for passage in the Senate. In some way Mr. Hull failed to let it get onto the floor and it died. That bill will come up in December.

Regarding the Shepard-Towner bill, we used every influence to hold back this bill, which means state medicine sooner or later. If you examine the reports you will find that it will mean state medicine with paid representatives and will take away your right to practice medicine.

Coming a little farther along, in our state there are two measures before the legislature in the matter of the control of tuberculosis, one fathered by the philanthropic organization that has been putting out tuberculosis stamps all over the state. That bill provided hospitalization for tuberculosis patients, sanitariums for which would be located in the three grand divisions. The study by the Tuberculosis Commission, appointed to investigate tuberculosis in Tennessee, resulted in the expenditure of \$20,000 with little report to anybody as to their activities. They reported that 35,000 persons in Tennessee have active tuberculosis now. Of that number more than 3,000

died last year. Would that give a right to the legislature at Nashville to take from your treasury \$90,000 to provide for social workers to go over the state and hunt up the tuberculous sick? They succeeded in tabling the original bill which provided for about \$18,000 appropriation with which to hospitalize tuberculosis patients. This last bill stands now to pass unless you stop it. The Secretary of your State Association took the authority over the Committee, over the President and over every other member of the Association and wrote on the stationery of your Society a letter that went to every member of the Society asking that this politicians' bill be passed. If this Committee has been functionless, I submit the above report to you. We have tried to kill the politicians' bills but we were unable to do so.

I have a letter from the American Medical Association relative to the promulgation of regulations under the National Prohibition Act and the Harrison Narcotic Act, which I have been asked to present to the House of Delegates:

Needed Safeguards in the Promulgation of Regulations under the National Prohibition Act and the Harrison Narcotic Act

The imposition of duties and prohibitions on the people through regulations promulgated by department heads, bureau chiefs and administrative boards acting under authority of Congress and not directly by acts of Congress, seems to be a necessary outcome of the magnitude and complexity of our Government. There is no reason, however, why the formulation and promulgation of such regulations should not be as public as are the deliberations of Congress in the course of the enactment of a statute, nor why such regulations as are promulgated should not be published as widely and made as accessible as are such statutes as are enacted. In fact, publicity, publication, and accessibility are essential to intelligent co-operation between the department head, bureau chief, or board promulgating a regulation and interested members of the community who must live under it, and are necessary to due execution and proper compliance.

Because of the absence of any statutory requirements as to the procedures to be followed with respect to these matters, the practices of various department heads, bureau chiefs, and board varies, and the practice of a single department head, bureau chief, or board may vary from time to time. It seems desirable, therefore, that the entire situation be regulated by law, so as to promote uniformity and to hinder arbitrary and unwise action.

The same principles should doubtless apply to all regulations having the force and effect of law. Organized medicine, however, can hardly concern itself with such a broad field, but must properly limit its interests to the field of particular interest to the medical profession, namely, the fields

covered by the National Prohibition Act and the Harrison Narcotic Act. With a view to the proper control of the promulgation of regulations under the acts named and under similar acts, the following principles are suggested, for enactment into law:

1. Adequate public notice shall be given, and opportunity afforded interested parties to be heard, by brief or orally, before any regulation is promulgated;

2. Any regulation promulgated shall be officially published so as to inform the interested public of that fact;

3. A reasonable time shall be allowed after the promulgation of any regulation before it becomes effective;

4. Authentic copies of all regulations shall be available at all times to persons requesting them;

5. All regulations promulgated shall be officially reported to Congress and shall be published in authentic form in the Statutes at large in some proper and convenient form, so as to bring publication up to date.

7. To meet emergencies, the President may waive the time limits and proceedings normally required for the promulgation of regulations, so as to permit the promulgation immediately of regulations necessary to meet the situation, such regulations to remain in force until regulations can be promulgated in due course.

I shall be glad to have any suggestions you are willing to offer with respect to this matter. If such legislation as is suggested above meets your approval, please let me know, so that the way can be better paved for its introduction when Congress convenes in December next.

(Signed) Wm. C. Woodward, Executive Sec'y.
Bureau of Legal Medicine and Legislation.

THE SPEAKER: This report is before you for disposition.

DR. S. H. HODGE, Knoxville: I would suggest a little explanation.

DR. C. N. COWDEN, Nashville: I would like to ask what is the position of the Committee. Does the gentleman not know that the Anti-tuberculosis Society has a paid lobbyist in Nashville?

DR. H. E. GOETZ, Knoxville: They have no paid lobbyist; they have a social worker.

DR. J. O. MANIER, Nashville: I had occasion when these two bills were presented to the State Legislature to hear a great deal about them, being President of the Nashville Academy of Medicine Legislative Committee. We went into these two bills. What this body should do in relation to these bills is briefly this: If you take the Anti-Tuberculosis League's own figures it will take \$400,000 for the next two years for the building and maintenance of 303 beds. By their own wording, from Mr. Krantz' report, there are 30,000 active tuberculous individuals in the state. Any man who has had any observation of tuber-

culosis hospital work knows that the turn-over in such an institution is very small. If we have 303 beds open, probably at the most there will not be more than 50 patients occupying these beds during the year. If this is true, taking his own figures of 30,000 active tuberculous individuals, we are going to hospitalize only 500 of that 30,000 in a year and in so doing we are going to spend every cent of the public funds that the state of Tennessee has that can be relegated to anti-tuberculosis work. So far as I know, there has been no political move in Nashville in opposition to that view except that by the local medical profession and by the State Department of Health. It does not look sound to me to spend all the money we have in the hospitalization of 303 patients. If we had the money it would be a beautiful ideal but as a practical thing it does not look sound. We all know that the greatest amount of value that can be attained among acute infectious diseases is in prevention. All the work the medical profession has done is in prevention that tuberculosis can be handled more sanely and better. We feel in Davidson County that there should be no choice between the two bills. In speaking thus, I do not want Dr. Goetz to feel that we might differ about the Anti-tuberculosis League. It is a question that must be looked at judiciously, to pick out the bill that offers the most to the tax payer.

DR. J. L. JELKS: Memphis When I received this letter referred to as being sent out by the Secretary of the Society, I felt that somebody in my part of the state ought to take some cognizance of it. I could not quite understand the merits or demerits of the bill, so I conferred with Dr. Burns, Dr. DeLoach, and Dr. Price, the latter having charge of the Shelby County Memorial Hospital. We discussed the matter from its various angles. It so happened that the day before I had endeavored to send a very active tuberculosis patient to this Memorial Hospital and there was no room, but finally I prevailed upon the Doctor to endeavor to get some place to put this patient to keep him from scattering tuberculosis in a houseful of children. When the Committee met we inquired of Dr. Price what these bills meant. As I understand it, \$20,000 has already been spent out of \$70,000 that was allowed to make the survey. Dr. Price contended that we knew already where the tuberculosis patients were but that was of little benefit if we did not provide some place for them; that in each grand division of the state there already exists a tuberculosis hospital, but that they cannot function for the care of additional patients, but that these so-called private institutions belonging to the county or city or district might serve the state by the payment for each patient of seven dollars per week, so that additional buildings might be provided for. As the matter was presented and explained by Dr. Price it readily appeared to the Committee that

we already had \$40,000 or \$50,000 and we already had a survey made and therefore this bill for additional sums to make additional surveys was without value. Secondly, that care of the tuberculous patients by doctors, as provided for in this bill, was of little merit, for with all our authority we can control the tuberculous patients who are indigent and occupying the rooms of other people not so infected. It appeared, therefore, that if any action were taken by this Society, it should be that the Legislative Committee of this Association and the Board of Trustees of this Association should be endowed with the power to see what should be sent out as propaganda from this state and from this Journal and it should reflect the policy of the Society as a whole.

DR. R. H. NEWMAN, Knoxville: If I may say a word in this connection, I want to deny a paid lobby in regard to this bill. I belong to the Civitan Club, which features this bill. It has no paid lobby. We have tried to get the bill through in order to save some of those afflicted with tuberculosis in Tennessee. We cannot save all of them, but we can take care of a few of them. This bill for a survey is to my mind absolutely useless. We know well the number of tuberculous patients we can take care of, why go and make a survey and locate these others when we can offer them nothing, not even hope, because they cannot be taken care of. The people who have been in the hospitals go back to their homes and are the best missionaries. They go back and tell their friends how to prevent it and they become missionaries. This bill for the survey I can see no good, because in the first place the patients and their surrounding conditions are not favorable for treatment. They have no means or money to provide the proper diet. The profession of this country is giving more to charity now than they should.

DR. S. H. HODGE, Knoxville: I have been under the impression from what Dr. Manier said that the Academy of Medicine drew some conclusions from their report. I cannot see how this matter can be threshed out now. Since a new Legislative Committee will be appointed within a few days, would it not be best to place authority in the committee to act on their best judgment for the benefit of the state? We can hardly come to any intelligent decision today.

DR. L. L. SHEDDAN, Knoxville: Knox County investigated this matter. We have one of the tuberculosis hospitals in Knox County and we know the wonderful work it is doing, the wonderful educational work and the wonderful benefits to be derived from even a small amount of hospitalization. We discussed this matter in open session of the Knox County Medical Society. We investigated it in every way and we went on record unhesitatingly as recommending the bill for hospitalization. We feel that Knox County

and East Tennessee have as much to say about it as Davidson County. We feel that a further survey would be an absolute waste. It is just like the United States Government coming into a county and making a survey of the moonshiners and bootleggers and yet they are still going. It is just about the same with a tuberculosis survey, what are you going to do with them. We are up against a condition. It is a condition which confronts us; it is not a theory. I am not a politician and I care nothing about politics; all I am after is for the best interests of the medical profession and humanity in Tennessee. We know what it has done in Tennessee. This Civitan Club is now taking up \$100,000 out of private funds to help these poor people. We feel it is nothing but right to say that Tennessee should do something towards helping these poor cases. Talk about a nurse going into private homes and making a survey. It is spending money for nothing. This survey has already been made. It was made by the Tuberculosis Association, and we know how many tuberculous patients we have. We know they are dying and nothing is being done to save them. It does seem that it is time the great State of Tennessee woke up, even if we cannot do it all at one time. From an economic standpoint what does \$400,000 amount to when it takes ten times that much in income away from work? Every one of these individuals are spreading it more and more all the time. The economic waste is ten times more than the cost of hospitalization. It is not a political question, it is an economic question.

DR. C. N. COWDEN, Nashville: I move you that we refer this to the incoming committee to be appointed by the incoming president. (Motion seconded and carried.)

THE SPEAKER: Was there any other matter, Dr. Goetz, which you wished to have taken care of?

DR. H. E. GOETZ, Knoxville: The letter from the American Medical Association which was just read.

DR. L. L. SHEDDAN, Knoxville: I move the endorsement of the American Medical Association proposal in reference to the National Prohibition Act and the Harrison Narcotic Act. (Motion seconded and carried.)

REPORT OF THE COUNCILLORS First, Fifth and Seventh Districts

THE SPEAKER: That gives us three Councillors' reports, we will pass to unfinished business.

DR. L. L. SHEDDAN, Knoxville: The amendment I offered a year ago is eligible to come up. This amendment reads as follows: Amendment to Chapter 6, Section 4:

The Secretary of this Association shall devote his whole time to the interests of the State Association. He shall be Editor of the Journal and

shall visit each councillor district at least once a year and oftener if advisable and assist the Councillors in organizing unorganized counties, and use every means possible to promote the interests of the State Association. Should the Secretary and Councillor deem it wise to organize two or more counties into one society they shall have a right to take such action and such societies shall be recognized by the State Association. His salary shall be _____ dollars as may be determined by the Trustees of the Journal or by the House of Delegates.

I move you the adoption of this amendment. (Motion seconded.)

THE SPEAKER: This amendment to the By-Laws is now before you for decision.

DR. J. L. JELKS, Memphis: This matter has been under consideration by me for several days. It is a very radical step. I agree that something ought to be done. It is not going to be an easy matter to get an all-time man who might function to your satisfaction and who knows what you stand for, who will comply with all your requirements and none other than you require. So I want to counsel against the passage of this amendment in toto. Part of it is sound. If you please, give to your Board of Trustees the authority to appoint an editor of your Journal, also a part-time secretary. It might be better if you will give the Board of Trustees power to secure the services of an assistant editor and secretary and the privilege of dictating to him the duties that may be imposed. Also I would like to have you add one man each year to the membership of the Board of Trustees, that man being the retiring president of the Society. The Board of Trustees should have the power to employ, and if need be to fire and employ some one else or we cannot be responsible for your Journal. I would like to counsel you to take these actions under consideration and act as I have suggested to you.

DR. S. H. HODGE, Knoxville: In regard to this amendment, there is one thing that should be corrected that is the wording, "His salary shall be _____ dollars, as may be determined by the Trustees of the Journal or by the House of Delegates." It should be one or the other. I offer an amendment to this amendment that the word "Trustees" be stricken out and the House of Delegates fix the salary.

I am opposed to the other way, for there seems to be the feeling that the Secretary-Editor of the Journal should be in the absolute hands of the Trustees. I believe it would be the height of folly to have the Board of Trustees, one from each grand division of the state, elect the Secretary of this State Association. It is centralizing power too much. If your Secretary is stationed in Nashville, the one member in Nashville would have too much authority. It is absolutely impossible for the Board of Trustees to keep up with every

detail in the Secretary's office. I happen to be one of your Trustees. My term expires and I am not looking for re-election. I merely offer these suggestions for what they are worth.

DR. L. L. SHEDDAN, Knoxville: I have felt and I think a good many of the members have felt that the responsibility must be lodged somewhere. When you leave it up to the whole organization you get into confusion to such an extent that it is impossible to do anything. The whole business of the American Medical Association along all lines is lodged in the Board of Trustees. I grant you that we should have more members on the Board of Trustees. I have in mind adding to the Board of Trustees the President as an ex-officio member and the Speaker of the House of Delegates as an ex-officio member.

DR. S. H. HODGE, Knoxville: Will it require another year to do so?

DR. L. L. SHEDDAN, Knoxville: No, I can offer it today and we can act on it tomorrow. The responsibility must lie somewhere. We should not elect Trustees of our Association in whom we have not confidence. I think the salary should be determined by the House of Delegates. The reason I put it that way is that I thought the House of Delegates might want to place a limit beyond which the Trustees cannot go in the employment of this particular man. I am not insisting that this amendment go into effect today or tomorrow. It might be well enough to give our Trustees a few months' time to put this into effect. They cannot do it today or tomorrow, but they can get together and get in communication with such individuals as would be suitable for the management of the Journal, but I do feel that the responsibility should be placed somewhere and that some one should be held responsible. I have kept very close track of the states in which they have an all-time secretary-editor and it is working out admirably in practically every state.

DR. S. H. HODGE, Knoxville: How are they elected?

DR. L. L. SHEDDAN, Knoxville: By the Board of Trustees. Another thing, a man who devotes all his time can go over the state and increase the membership of this Association twenty-five per cent. By devoting his time to the Journal and looking after the advertisements he will more than make his salary. He will more than increase the revenue sufficient to pay his salary provided you get a good live wire and provided you can get a man competent and trained in this line of business. I hope Dr. Hodge will withdraw his amendment and put it up to the Trustees. Dr. Jelks suggested that the retiring president shall be added. I do not care whom you add so long as you get a man who is competent and who will take an interest. I do not think we will elect any man as president who would not take an interest.

DR. W. K. SHEDDAN, Columbia: I want to offer an amendment to Dr. Hodge's amendment that the responsibility of the management of the Secretary's office and the editorship of the Journal be lodged with the Board of Trustees instead of the House of Delegates.

DR. S. H. HODGE, Knoxville: You cannot amend it that way, because it will have to lay over a year. I will withdraw my motion.

DR. W. K. SHEDDAN, Columbia: I will make a motion to strike out the words "House of Delegates." My reason is that in the states in which there is a full-time editor and secretary, and some of them have nothing like the members in the profession in Tennessee, the power is left with the Board of Trustees. The American Medical Association is controlled by the Board of Trustees. In Indiana one of the most prominent men connected with the Journal is not a doctor; he is a publicity man. I have been subscribing for the Journal of the Illinois State Medical Society for years, of which Dr. Whalen is the editor-in-chief, and it is one of the best journals that I get.

THE SPEAKER: Dr. Sheddán's amendment has not been seconded.

DR. S. H. HODGE, Knoxville: It has not been seconded, so I am in order to discuss the original amendment. Of course any one knows that the Trustees should have control of the Editor of the Journal. It is perfectly natural and I see no reason why they should not be allowed to hire or to fire the editor. The Trustees should not have control of the Secretary of the entire Association. Their duties pertain only to the editor of the Journal and the handling of funds. This House of Delegates has no authority as far as the election of the Secretary is concerned.

DR. T. B. YANCEY, Kingsport: I think the Trustees have been bridled too much. We should not only give them power to hire and fire the Editor or Secretary, but they have to be further empowered to say whether he is to be a full-time man. At the present time I doubt whether we have the finances to have a full-time man. It is absolutely necessary that we have a secretary while time is being given the Trustees to look into the matter. I offer the following as an amendment to Dr. Sheddán's amendment: "The Secretary of the State Association shall devote his whole or part time to the interests of the Association"; "That the Trustees be empowered to select a part or whole time Secretary and remove him at their pleasure." (Seconded by Dr. C. F. Anderson.)

DR. K. S. HOWLETT, Franklin: It strikes me that at Dr. Jelks' suggestion we have got to take very radical action. I do not believe this House of Delegates is in position to really vote intelligently on the amendment offered by Dr. Sheddán. I rise to make a motion that action

on this matter be deferred and be referred to a committee composed of the Board of Trustees and the incoming Secretary and that they be requested to report at the next meeting of this Association.

DR. ROBERT CALDWELL, Nashville: The suggestion is right. Let the House of Delegates empower the Trustees to hire an assistant, with the idea of finding a man who would be suitable.

DR. J. O. MANIER, Nashville: They did not empower the Trustees; they empowered a committee to employ an Assistant Secretary; why not let it stand.

DR. J. L. JELKS, Memphis: When we met in Nashville it was requested that an assistant editor be employed. It was not acted upon. We had no further authority. You are holding us responsible as Trustees and we have no authority.

DR. ROBERT CALDWELL, Nashville: We must have some one to carry on the work of the Association until an all-time Secretary-Editor is found. Why not let the matter stand still as it is until a man can be arranged for. It may be months before a man can be found. As far as Dr. Sheddán's amendment is concerned, it only referred to the salary to be paid.

DR. S. R. MILLER, Knoxville: I have a good deal of experience with hospitals and boards of trustees. If we elect these trustees and hold them responsible and give them authority to employ a man to be Secretary-Editor, let them fix the salary, and if he is not the right man, fire him. Do not put a limit on what the Trustees shall pay for salary.

DR. H. P. LARRIMORE, Chattanooga: Dr. Hodge makes some good points, for instance, that one point that next year when the House of Delegates meets the Board of Trustees has hired and fired two or three secretaries. Would not the House of Delegates have power to elect a Secretary if they so desire?

THE SPEAKER: That would have something to do with the kind of a motion you pass here today.

DR. H. P. LARRIMORE, Chattanooga: The Society needs a revival; the members are actually dead. The great idea is to get a part or full-time Secretary-Editor. You cannot separate the two offices. I doubt that you can ask a doctor to give up private practice. The responsibility has to be placed somewhere. Let us not go into all the detail of what he is going to do and what he is going to be paid. We have at least \$17,000 and we can experiment for at least one year. What we need is to start a revival. Whether he is a layman or a doctor makes no difference, but put the responsibility on somebody. The big thing is to adopt this amendment that Dr. L. L. Sheddán proposes. That will be the greatest thing this Society ever did. There will be a lot of details to be worked out.

DR. C. T. NEWELL, Chattanooga: I am sold

on this full-time secretary. I am also sold on giving authority to the Trustees. The Southern Medical Association has a secretary and also a secretary-editor. We cannot select a secretary-editor until we have investigated him. This Board of Trustees should have the power to select in the next few months some good man in Tennessee or out of it who can run this Association like Olin West used to.

DR. E. R. ZEMP, Knoxville: This whole discussion seems to run on the line of expediency. We are all inclined to procrastinate. What is the use of putting this off another year or six months or three months. That is what is the matter today. We sit down and see that is a fine idea and we do not do one single thing to help ourselves. I have come to the conclusion that it is absolutely necessary for me as a physician to make some personal sacrifices if I would further the interests of my profession. We cannot just sit down and wait for an opportunity to go to a medical meeting; we have to grab the opportunities and take advantage of them. This is a crisis in the life of the Tennessee Medical Association occurring right here. It cannot be any worse than it has been, because it is absolutely impossible for any man to give only a small part of his time to the Tennessee Medical Association and make a success of it. It cannot be done. There is such a crying need for activity right now that it is necessary for us to get a man that will take hold of our ship of state and steer it away from the rocks of state medicine and socialism. You say you cannot get a man. What is the matter with us? Is our credit bad; is our reputation bad? Are we regarded as a bunch of nuts? Everybody else gets one. The city of Chattanooga just got a splendid man to run its health department. You do not have any trouble getting social workers. There is no reason why we cannot get them. It may take time to get them. We may make mistakes, but these things will work themselves out. Give the Trustees full power to hire and fire and to dictate the policy of the Journal and then hold them responsible. I do not think a man would want to be a Trustee and held from responsibility. I do hope I will awaken you to the fact that we are not doing anything to save ourselves from the calamities that face us. One of the best starts we can make is by electing an all-time Secretary-Editor. He has got to be a John the Baptist to his State Society and entirely washed free by baptism from socialism and state medicine. Let us elect Trustees and give them absolute power to do anything they want to as far as running the Journal and dictating the policy and controlling the Secretary-Editor. If they make a mistake, next year change them. It is going to take an enormous amount of work for these Trustees to get this Journal started. It is an innovation, but we need an inno-

vation. We need a bomb thrown up to blow us sky high.

As to leaving it to the House of Delegates, there is no one man in the House of Delegates who gives the Journal a thought. They do not take an interest in the Journal because they are busy. I hope you will adopt this resolution and give the Trustees full power, and I hope you will have a full-time Secretary-Editor. You may not get him in six months, but you can get him.

DR. J. P. TAYLOR, Wartrace: I think I know what is the matter with these fellows; it is a matter of giving up rights. I am in favor of holding to the things that we have got. I am opposed to surrendering every right and every privilege to two, three or four men, I do not care how honest they are. We have seen centralization in the Federal Government. We have seen it in the State of Tennessee and we know what it means. I am opposed to surrendering the rights of this representative body.

DR. C. N. COWDEN, Nashville: We are ready to vote right now.

DR. A. F. RICHARDS, Sparta: I rise to ask if this resolution passes this morning will this House of Delegates elect any Secretary?

DR. L. L. SHEDDAN, Knoxville: I brought up this question at Memphis and it was exactly the same cry, put it off. Procrastination is the thief of time. I do not see we have anything to gain by waiting. Referring to Dr. Taylor's talk, we do not give up any rights. This Association and the Journal, everything, has been run by one man. We want to get a little more rights than we have. What is everybody's business is nobody's business. It was left up to the Secretary. No one can do any better than our present Secretary has been doing for the Journal. We have got to make a start somewhere and sometime. The Trustees are responsible to the House of Delegates, Dr. Taylor. I move that the discussion be closed.

THE SPEAKER: The question has been called for. There seems to be quite a division as to what will happen. I see a number of gentlemen in the House who have not the official delegate badge. If these gentlemen are regular delegates or representing counties that have no delegates, they should have a badge.

DR. A. F. RICHARDS, Sparta: We have credentials here from Monroe and McMinn Counties. We have seated E. M. Akins from McMinn County and R. C. Kimbrough from Monroe County. Furthermore, in the absence of the two regularly elected delegates from Davidson County, R. R. Brown and W. G. Kennon, we have seated T. G. Pollard.

THE SPEAKER: Without objection these are regular delegates entitled to a vote.

DR. J. L. JELKS, Memphis: I rise to make an inquiry. We are voting on a serious matter. I want you to understand that the Trustees do

not want the office. Secondly, if you vote for this resolution you must provide some way for some one to be elected temporarily.

THE SPEAKER: That will be taken care of. You had an amendment, Dr. Yancey?

THE SPEAKER: Practically the only amendment is to strike out the words "House of Delegates." You are delegating this authority to the Trustees and changing the word "all-time" so that it will give them discretionary authority as to whether the Secretary will be all-time or part-time. Dr. Sheddan, do you accept the amendment?

DR. L. L. SHEDDAN, Knoxville: I accept it. THE SPEAKER: You have heard the amendment to the amendment as offered by Dr. Yancey, you have heard the amendment read, are you ready for the question? (Motion carried.)

DR. S. H. HODGE, Knoxville: I wish to draw your attention to the fact that you have no Secretary.

THE SPEAKER: You have an Editor-Secretary until tomorrow morning.

DR. S. H. HODGE, Knoxville: Tomorrow morning some one should be elected temporarily, otherwise your Journal will not be out and you have advertising contracts which will be void.

DR. L. L. SHEDDAN, Knoxville: I wish to offer the following amendment to come up tomorrow:

Chapter VI, Section 1. President.—He shall be ex-officio member of the Board of Trustees.

Section 5. Speaker of House of Delegates.—He shall also be ex-officio member of the Board of Trustees.

THE SPEAKER: This amendment will lay over until tomorrow morning.

DR. J. L. JELKS, Memphis: Will you read the amendment again. (Dr. Sheddan reads.) Why not say the retiring president and president. The retiring president knows better than the incoming president what the Society wants.

DR. W. K. SHEDDAN, Columbia: I move we adjourn until 2 p.m. (Motion seconded and carried.)

Adjournment until 2 p.m.

WEDNESDAY AFTERNOON SESSION

The Wednesday afternoon session was called to order at 2:10 p.m. by the Speaker.

THE SPEAKER: We were working on the Councillors' reports when we suspended the reports to take up unfinished business. We shall call for the other reports.

REPORT OF THE COUNCILLORS*

Second, Third, Fourth, Eighth, Ninth and Tenth Districts

DR. S. R. MILLER, Knoxville: We had a case come up before the Council in Knox County which was finally brought to the State Council. I called a meeting of the State Council at Nashville on July 21 and we had nine or ten Councillors

present. The case was a peculiar one in that the County Society had appealed it when they had failed to expel a man by the necessary two-thirds vote. It was held by the Council primarily that they had nothing to appeal; they could not appeal the case because they had nothing to appeal. Another point that was brought out was that the Council seemed to hold that I, as local Councillor, should have first passed upon it. There is only one thing in the Constitution and By-Laws that bears upon it and I want to read that. (Reads section from the By-Laws.) I am mentioning that because there is another case coming to the Council in which just the reverse is true; the local Council decided and they are appealing it on another point. The case was sent back to the County Society for further judication and was referred back to me. It was returned to them and is coming up again. For the Council meeting in Nashville there were some expenses. I sent in my bill and advised all my Councillors to send their bills to the Secretary, but this body has to authorize the payment of these bills. I wish to offer an amendment to the By-Laws to lay over until tomorrow morning:

Chapter VII, Section 2, substitute, "If all Councillors are not present at the annual session, on report of the fact by one or more Councillors the House of Delegates shall elect temporary Councillors or authorize the Speaker to appoint one or more temporary Councillors to sit in the absence of an absent Councillor, for consideration of questions before the Council."

Chapter VII, Section 2, to become Section 3.

Chapter VII, Section 3, to become Section 4. Add at beginning of the section, "Any appeal from a county society or member should first be made to the local Councillor, who may himself decide the question at issue or may at his discretion take the matter without further appeal to the State Council." After which continue section now printed as 3 to become Section 4.

THE SPEAKER: These amendments Dr. Miller has offered will lay over until tomorrow morning.

THE SPEAKER: The matter of expense that Dr. Miller has presented for the Council meeting is now before you.

DR. L. L. SHEDDAN, Knoxville: I move that it be paid. (Motion seconded.)

THE SPEAKER: Does that include bills not presented?

DR. SHEDDAN: Yes.

(Motion carried.)

THE SPEAKER: The Councillors' reports are before you for adoption.

DR. L. L. SHEDDAN, Knoxville: I move you have the Councillors' reports as read by the chairman of the Judicial Council be received and spread on the minutes. (Motion seconded and carried.)

THE SPEAKER: The matter of election of

Councillors comes up at this time. Councillors for Districts Second, Fourth, Sixth, Eighth and Tenth are to be elected at this time.

ELECTION OF COUNCILLORS

The election of Councillors resulted as follows:
Second District—S. R. Miller, Knoxville.

Fourth District—J. T. Moore, Algood.

Sixth District—Howard King, Nashville.

Eighth District—A. B. Dancy, Jackson.

Tenth District—W. B. Burns, Memphis.

THE SPEAKER: This brings us to unfinished and new business.

DR. J. L. JELKS, Memphis: I would like you to set forth the time for the service of incoming or new Secretary to begin. That will simply expedite matters.

THE SPEAKER: Dr. Gallagher's term expires tomorrow morning on the report of the Nominating Committee. At that time the announcement will be in order.

DR. J. L. JELKS, Memphis: With reference to the appointment of the retiring president on the Board of Trustees as recommended by me, will that come up?

THE SPEAKER: That will come up tomorrow morning under Dr. Shedd's amendment.

DR. A. F. RICHARDS, Sparta: Under new business I have something to bring up with reference to the Railway Surgeons' Section, which met on Monday. The Railway Surgeons wish to have their Section meet at 2 p.m. on Tuesday, the first day of the meeting, instead of on Monday as heretofore. I was asked to bring this matter before the House of Delegates.

THE SPEAKER: In looking over the By-Laws I find that that will necessitate an amendment to the By-Laws, so it will be necessary for you to file an amendment under Chapter I, Subsection 2 of Section 5.

DR. A. F. RICHARDS, Sparta: I wish to offer the following amendment to Chapter I, Subsection 2 of Section 5, that the word "preceding" in line six be stricken out.

DR. E. W. PATTON, Chattanooga: We have a similar situation regarding the Eye, Ear, Nose and Throat Section. Four years ago at Knoxville we asked for the same thing. If all that is necessary is to make a motion, I would like to do so.

THE SPEAKER: With reference to that, let me read the Section of By-Laws. (Reads.)

DR. E. W. PATTON, Chattanooga: I would like to make a motion that we meet on the first day of the regular meeting.

THE SPEAKER: There is no need for a motion. I take it that you can set your own day. Whatever motion you wish to present will be considered.

DR. E. W. PATTON, Chattanooga: I want to make a motion that you as Speaker of the House instruct our Section officers that we wish to change our meeting from the first day of the

meeting, that is, Monday.

DR. W. B. BURNS, Memphis: That is entirely out of order. Your Section can do as it pleases; there is nothing in the By-Laws against it.

DR. E. W. PATTON, Chattanooga: I want to get something official.

DR. W. B. BURNS, Memphis: There is nothing to prevent you from changing it.

DR. WILLARD STEELE, Chattanooga: I can tell you why we have not been able to change the day. The Secretary heretofore could not furnish a stenographer on the day of the general session. We can meet but we cannot get any one to take our notes.

THE SPEAKER: That is something you will have to thresh out with the Secretary. He would not put anything in your way to prevent your holding the meeting any time you want to.

DR. WILLARD STEELE, Chattanooga: Can we report to our Section that we will be furnished a stenographer on any day we meet?

THE SPEAKER: That is something I cannot say. You will have to consult the Trustees.

DR. S. R. MILLER, Knoxville: I would like to ask the House of Delegates for some stationery especially printed for the Councillors. I would like to authorize the Board of Trustees to publish our Constitution and By-Laws in book form.

THE SPEAKER: You have heard Dr. Miller's request for stationery and his remarks regarding the publication of the Constitution and By-Laws. It is now before you for disposition.

DR. L. L. SHEDDAN, Knoxville: I move that the Association order the Trustees to publish the Constitution and By-Laws in book form with all the amendments included and mail a copy to each member of the Society. (Motion seconded and carried.)

DR. W. K. SHEDDAN, Columbia: I move that Dr. Miller be given such stationery as he needs for his Councillors. (Motion seconded and carried.)

DR. H. L. FANCHER, Chattanooga: Has he the authority to have it printed or must he depend on the Secretary. His request was for permission to have stationery printed.

THE SPEAKER: I think it may be handled any way the Trustees see fit. It may be possible for the Trustees, through their regular printing contract, to handle it more economically.

DR. J. L. JELKS, Memphis: Would it be satisfactory to Dr. Miller to have the Trustees do that?

DR. S. R. MILLER, Knoxville: Entirely so.

DR. J. L. JELKS, Memphis: We cannot spend any money without your sanction. Last year I was sent some stationery to use for the Trustees. We are going to require more this year. I take it with your permission the Trustees will be permitted to have some stationery.

THE SPEAKER: Dr. Miller would like a meeting of the Councillors on adjournment of this

body. Without objection the House of Delegates will stand adjourned until 9 o'clock tomorrow.

Adjournment until 9 a.m. Thursday.

THURSDAY MORNING SESSION

The Thursday morning session was called to order at 9:30 by the Speaker.

THE SPEAKER: If there is any one present who represents a County Society who has not been seated as a delegate or any of the larger counties who have no representatives here in the House but have members present, we will be glad to seat them as delegates.

REPORT OF THE NOMINATING COMMITTEE

Dr. W. K. Shedd

President—Battle Malone, Memphis, elected; J. L. Dunavant, Henning; G. A. Brandon, Lexington.

Vice-Presidents—Lyle Motley, Dyersburg West Tennessee; W. W. Porter, Springfield, Middle Tennessee; G. E. Wilson, Rockwood, East Tennessee.

Speaker of the House—C. N. Cowden, Nashville.

Trustee—Robert B. Wood, Knoxville, for three years.

Delegates to the American Medical Association—L. L. Shedd, Knoxville, three years; H. B. Everett, Memphis, one year, W. H. Witt, Nashville, two years.

Alternates—J. V. Hodge, Kingsport (Shedd); Robin Harris, Memphis (Everett); T. D. McKinney, Nashville (Witt).

The nominations for each office were acted on in turn. Nominations from the floor were called for President, Vice-Presidents, Speaker of the House, and Trustees. None were made and nominees were duly elected.

When the nominatos for delegates to the American Medical Association were presented, the Speaker called for nominations from the floor. Dr. K. S. Howlett, Franklin, nominated Dr. John A. Witherspoon, Nashville, as delegate for two years. Ballots were cast for Dr. Witt and Dr. Witherspoon, the former receiving 14 votes and the latter 16. The Speaker declared Dr. Witherspoon elected delegate for two years. The other two delegates and the alternates were elected by unanimous ballot.

THE SPEAKER: The Nominating Committee felt that it was up to the Board of Trustees to appoint a Secretary-Editor. Are you ready to make the announcement?

DR. J. L. JELKS, Memphis: We have engaged the services of Dr. H. H. Shoulders, of Nashville, as part-time Editor-in-Chief.

THE SPEAKER: This completes the election of officers. I will ask Dr. Zemp and Dr. Burns to make the announcement to the general body. Dr. Cowden, will you take the Chair?

THE SPEAKER: Is there any unfinished business?

DR. A. F. RICHARDS, Sparta: I want to read the amendment to the By-Laws which I presented yesterday:

Chapter I, Subsection 2 of Section 5, that the word "preceding" in line six be stricken out.

I move its adoption. (Motion seconded and carried.)

THE SPEAKER: Dr. Shedd offered an

amendment yesterday to Chapter VI, Section 1, as follows: "President.—He shall be ex-officio member of the Board of Trustees," and to Section 5, "Speaker of the House.—He shall also be ex-officio member of the Board of Trustees."

DR. J. L. JELKS, Memphis: I wish to offer an amendment to this amendment, that the retiring president in place of the president be made ex-officio member of the Board of Trustees.

DR. L. L. SHEDDAN, Knoxville: I accept the amendment.

DR. K. S. HOWLETT, Franklin: It seems to me we are taking a position that was never taken before in reference to the Board of Trustees. The President is always an ex-officio member. He is supposed to be at the head of the whole thing.

DR. J. L. JELKS, Memphis: As I understand the President is an ex-officio member, but we want the retiring President.

DR. L. L. SHEDDAN, Knoxville: Strike out the word ex-officio and say the outgoing President shall be a member of the Board of Trustees for one year.

DR. H. L. FANCHER, Chattanooga: Under the section for the election of Trustees you have to make a change in order to make the outgoing president a member.

DR. L. L. SHEDDAN, Knoxville: As we understand this is a temporary arrangement for this year. The Trustees feel that they would like a little more help and by changing the By-Laws this can be done. As I understand it, the Constitution would have to be changed before you could add to the Board of Trustees. I believe your point is well taken.

DR. H. L. FANCHER, Chattanooga: You could limit him according to Dr. Shedd's original motion by making him an ex-officio member.

THE SPEAKER: State the motion.

DR. L. L. SHEDDAN, Knoxville: That the retiring President shall be ex-officio a member of the Board of Trustees for one year. (Motion seconded and carried.)

REPORT OF THE AUDITING COMMITTEE

DR. K. S. HOWLETT, Franklin: We have examined the foregoing items that have been reported and find them correct in the Treasurer's report. The Treasurer's bond is reported to be in a safe in Nashville and was not examined by the Auditing Committee.

DR. L. L. SHEDDAN, Knoxville: I move that the report be received and spread on the minutes. (Motion seconded and carried.)

DR. J. L. JELKS, Memphis: I have some matters to bring to your attention. We are three months behind with the Journal. Despite the job, it will cost a lot of money and time to get out three additional Journals. We must act quickly or we will have the advertisers on our neck. Do not expect your treasury to be so flush next year as when your Journal was not gotten out regularly. You should fix the amount of bond for your Treasurer and see that this bond is satisfactory. That is not the duty of the Trustees of the Journal. I requested last year that the Treasurer take out a \$5,000 bond, which I believe was done. This probably was not my duty, but I presumed it was when I was requested to state what the amount of the bond should be. The duties of the Trustees should be clear. We will cause to be

appointed associate editors from each of the grand divisions of the State and we request that you assist in every possible way to make this Journal for your county, your society, your district, and for every part of your State. Please go home and canvass your local society and write your Trustees whom in your opinion would help us as an assistant editor to express your thoughts and reflect your will in the columns of the Journal. Your Board has appointed as Editor-in-Chief and Secretary Dr. H. H. Shoulders, of Nashville, and instructed him to appoint an all-time Assistant Secretary-Editor and proceed at once with his duties.

DR. K. S. HOWLETT, Franklin: I move that the report of Dr. Jelks be received and spread on the minutes. (Motion seconded and carried.)

THE SPEAKER: I am reminded that we have not elected the Chairman of the Medical Defense Committee.

DR. H. P. LARRIMORE, Chattanooga: I move that Dr. S. R. Miller be elected Chairman of the Medical Defense Committee. (Motion seconded and carried and Dr. Miller declared elected.)

DR. J. L. JELKS, Memphis: You have not acted on the bond for the Treasurer.

DR. H. B. EVERETT, Memphis: The Constitution states that the bond will be set by the other two members of the Board of Trustees.

DR. W. K. SHEDDAN, Columbia: There is a matter to be brought up and that is the report of the Committee on the One Hundredth Anniversary of the Society. Dr. Duncan Eve is the chairman, but he is not here.

THE SPEAKER: The committee is giving that matter their attention and will be ready to report at the proper time.

DR. L. L. SHEDDAN, Knoxville: We have a very distinguished elderly physician in Knoxville who is very familiar with the early medical history of Tennessee. He is Dr. J. M. Kennedy, of Knoxville. I would be glad if the House of Delegates would take action to place him on this Committee on Medical History.

DR. H. B. EVERETT, Memphis: Dr. Eve was empowered to appoint his own committee. You might take the matter up with him.

DR. H. P. LARRIMORE, Chattanooga: This Board of Trustees ought to try to relieve Dr. Miller of some of his work and prepare some legislation during the next year so that he can be relieved of some of the responsibility.

THE SPEAKER: That will be taken up.

DR. L. L. SHEDDAN, Knoxville: The retiring President asked me to bring this to the attention of the Society, namely, the election or appointment of a Legislative Committee or Public Policy Committee for an indefinite term and easily accessible to the Legislature. I am inclined to think this will have to be done by a new By-Law, making this a permanent committee. The amendment will have to lie over for a year, but as the legislature does not meet next year it will not make any difference. Of course we have Congress in session almost all the time and we might want to add our mite to some national legislation.

DR. A. F. RICHARDS, Sparta: As I understand, the President will appoint this committee. It has always been done in the past and I know of no reason for deviating from it. I think the point that should be considered is for the committee to be made perpetual. I think that is the only thing to come before the House of Delegates.

DR. E. R. ZEMP, Knoxville: You know this

committee is the only one that is worth much to us. It is a vital committee. The point I raised is this, the President appoints this committee and just about the time they are getting acquainted with the legislative matters a new committee is appointed. That committee should be a committee of five. It is difficult to get men together from different parts of the State. The Constitution and By-Laws does not state that they must be appointed from the grand divisions of the State. They must be in easy access of the legislature. If you change this committee every year you are never going to have a Legislative Committee that will amount to anything. We must have some power down at Nashville. The only way to get it is to have a live Legislative Committee.

DR. E. T. NEWELL, Chattanooga: I am heartily in accord with what Dr. Zemp has said. Our local Association has appointed delegates to this body for three, two and one year. The same thing holds good for the Legislative Committee. I do not believe they should be appointed for life, but two for two years, one for six years and two for four years, or some such arrangement. I do believe we should have one man from each grand division of the State, but three from Middle Tennessee. It is important to have a man from East and West Tennessee. The chairman of the Senate may be from East Tennessee, and if we had some important legislation our member from East Tennessee would be able to get in touch with the chairman of the Senate. We should have three from Middle Tennessee so as to always get a quorum.

THE SPEAKER: This amendment should be submitted in writing to lay over one year.

DR. A. F. RICHARDS, Sparta: It seems to me that the solution of this matter would be about this, that we should recommend that the By-Laws be so changed as to make the Legislative Committee a permanent committee, that there should be five members, two appointed for a period of five years, and one new member added each year.

DR. W. K. SHEDDAN, Columbia: We should have the Secretary-Editor as a member of that committee. I would offer an amendment to the By-Laws that the committee shall consist of five members and the Secretary of the Association who is the chairman of the committee, the members to hold office for a period of one, two, three, four and five years, respectively.

DR. E. T. NEWELL, Chattanooga: May I suggest that each grand division of the State be represented.

DR. W. K. SHEDDAN, Columbia: I will add to it, shall consist of five members, one from East Tennessee, one from West Tennessee and three from Middle Tennessee.

DR. L. L. SHEDDAN, Knoxville: In East Tennessee we have one of the liveliest societies in the State. Last year by resolution we appointed a Legislative Committee and we appropriated money from the treasury to pay their expenses should they be summoned to the legislature by the State Legislative Committee. I think if all the three central organizations would make a proposition of that kind, it would be a great help.

DR. W. K. SHEDDAN, Columbia: I move that the amendment as presented be laid on the table to be acted on at the next meeting.

DR. W. K. SHEDDAN, Columbia: I move that the House of Delegates adjourn sine die. (Motion seconded and carried.)

The meeting adjourned.

THE JOURNAL

OF THE

TENNESSEE STATE MEDICAL ASSOCIATION

Devoted to the Interests of the Medical Profession of Tennessee

Office of Publication, 550 Lambuth Bldg., Nashville, Tenn.

H. H. SHOULDERS, M.D., Editor and Secretary

APRIL, 1927

OUR NEW PRESIDENT

Dr. William Battle Malone, the newly elected president of the Tennessee State Medical Association, was born July 4, 1874, in Brownsville, Tennessee. He received his education at Webb's School, Bellbuckle, Tennessee, graduating from there in 1892. He then entered Vanderbilt University and received his B.A. degree in 1896. He was a member of the Vanderbilt football squad, playing the position of quarterback, and even today among the old men his knowledge of football and his generalship are spoken of in the highest terms. He received his M.D. degree from Memphis Hospital Medical College in 1899. After graduation he became associated with Dr. William Rogers, one of the leading surgeons of Memphis. This association was continued until the death of Dr. Rogers.

Dr. Malone has held a number of teaching positions, first with the Memphis Hospital Medical College and later with the University of Tennessee.

When this country entered the war with Germany he was made commanding officer of Hospital Unit P. This unit was sent across and Dr. Malone did some wonderful work at the front. In recognition of this work he was awarded a distinguished service medal.

He is an ex-president of the American Association of Railway Surgeons and was elected vice-president of the Southern Surgical Association in 1923.

He was made a member of the American College of Surgeons at the time that the College was organized. He has been a leading surgeon of the South for many years and he is highly respected by all who have

ever come in contact with him. He is a man of broad views, has a high sense of justice and has always shown a marked interest in upholding the traditions of the medical profession.

The Tennessee State Medical Association is indeed fortunate in selecting a man who is so well known and honored throughout this country. Under his leadership the Association will go forward at a rapid rate.

DR. L. E. BURCH.

RESPONSIBILITY OF ORGANIZED MEDICINE IN TENNESSEE

Tennessee has a population of 2,337,885 according to the census estimate for the year 1926. There are, according to the A. M. A. Directory, 3,148 doctors in Tennessee. This figure includes doctors of all ages and all colors. It is impossible to determine at the present time the number of doctors who are actively engaged in the practice of medicine. We would estimate that there are about 2,500 active doctors in the State. There are at the present time 1,332 paid-up members of the Tennessee State Medical Association. This is less than fifty per cent of the total number of doctors and almost fifty per cent of those estimated to be engaged in active practice.

The State Association has issued seventy-three charters to counties in Tennessee. Some of these counties have not reported for over three years. A number of the others have not reported for the years 1926 and 1927.

According to the reports of the councils, as they appear in the Minutes of the 1926 meeting, a majority of the organized counties have fewer than six programs per year. This is an unfortunate situation from the standpoint of both the doctors and the public.

It may be said that a doctor keeps himself abreast of the times by one or all of three ways: 1. By reading medical literature. 2. By attendance of medical societies. 3. By post-graduate work.

The benefits of progress, especially as to



BATTLE MALONE, M. D., Memphis, Tenn.
Newly Elected President of the Tennessee State Medical Association

knowledge of diagnosis and treatment, are available to the public through the medium of a physician only. If a physician is not abreast of the times that portion of the public he serves does not receive the benefits of medical progress. This is not a lamentation, it is a statement of facts, and we hasten to say that we do not believe that the situation in Tennessee is markedly different from that in most other states.

The type of medical service that the people of Tennessee receive is determined not by the number and type of specialists in any of the various branches of medicine, but by the ability and character of the general average of doctors throughout the State.

It seems to us to be the duty and responsibility of organized medicine in Tennessee to see to it that the general average of doctors is brought to the highest pitch.

It is the responsibility of doctors who enjoy the benefits of organized medicine to carry the message and bring these contacts to that portion that is unorganized. It is not a responsibility we owe the doctors because they are doctors, it is because it is a responsibility we owe the public. One inferior doctor may bring reproach upon the entire profession. Lay people speak of doctors as a group. The press refers to doctors as a group. It is up to us to make our group the best we can make it.

Nothing said in this editorial should be construed as conveying the idea that doctors located in unorganized counties are poor doctors. We know many so situated who are quite superior—who render today a superior service, but in the very nature of things the ones who are in contact with medical progress by means of literature and attending medical meetings and post-graduate work are bound to be superior.

Preference to medical papers that will be of the greatest interest and the most practical help to general practitioners will be given in this Journal.

In carrying out this policy it may be that we will not receive the approval of higher journalistic critics, but we believe a greater

service will be rendered the profession of medicine and the general public of Tennessee.

THE NEW ASSISTANT SECRETARY-EDITOR

We are pleased to announce the appointment of Dr. William Moore Hardy as full-time Assistant Secretary-Editor of the Journal of the Tennessee State Medical Association.

Dr. Hardy is a graduate of the University of Tennessee of the year 1910. He was then sent as a medical missionary to the Tibetan border of China, where he has since engaged in practice and the operation of a hospital with the exception of a furlough in 1918 and 1919, in the Christian mission fields of China. He is now on furlough, having arrived in this country October 6, 1926.

Dr. Hardy is a Christian gentleman and an able doctor. He has a pleasing personality and all the accomplishments necessary to the performance of the duties encumbered upon him. Plans are on foot for him to be in the field at an early date in the interest of organized medicine.

This office has been so busily engaged in getting out almost simultaneously two past due issues and one current issue of the State Journal that but little time has been left to be devoted to organization work. Our real organization work will begin within ten days.

The State Association is most fortunate in being able to secure the services of Dr. Hardy, and it may be said that the unfortunate situation which prevails in China at the present time is in part responsible for our good fortune.

AN ACKNOWLEDGMENT

Through an oversight the picture of Battle Malone, M.D., newly elected President of the Tennessee Medical Association, appeared in the March issue of the Journal, instead of the April issue as intended. The Rich Printing Co. assumes the responsibility for this error, and in this issue are reproducing the picture as an insert.

DEATHS

Dr. J. F. Arnold, of Limestone, Tenn., died March 30, at a Greeneville sanitarium. Dr. Arnold was for many years county physician of Washington County. He was born in 1860 and graduated from the University of Tennessee Medical Department in the class of 1889.

Dr. John R. Charlton died April 2 at his home in Lavergne, aged 73 years. Dr. Charlton graduated from the Medical Department of the University of Nashville in 1879 and began practice of medicine immediately after receiving his degree.

Dr. W. R. McKenzie, of Center Point, Tenn., died April 2 at his home. He was 72 years old and had been an active physician for fifty years.

Dr. W. T. Medling, 78, died at his home in Dyer, Tenn., on March 28. Dr. Medling graduated from the Medical Department of the University of Nashville in 1874 and was licensed to practice in Tennessee in 1889.

Dr. W. H. Ragland, 84, a Confederate veteran and Putnam County's oldest physician, died April 2, at the home of his son, W. E. Ragland, in Murfreesboro. He was a graduate of Vanderbilt Medical Department.

Dr. Simon Reynolds Spight, of Bolivar, died March 29, at Campbell's Clinic, from a fractured hip.

Dr. Bert G. Simmons, of Maryville, Tenn., died April 4, aged 69, at Jefferson Hospital, Philadelphia. For the last thirty years he had been connected with Johnson & Johnson, manufacturing chemists.

Dr. Joseph H. Smith, 68, died April 2 at his home in Knoxville. He began practice in Knoxville thirty years ago and continued until the failure of his health.

MEDICAL SOCIETIES

The Blount County Medical Society met on March 24 to greet Dr. B. I. Harrison, of Knoxville. After transacting the routine business of the society the floor was taken by the guest, who in a most interesting manner spoke on the subject of "Goiter." In his discourse he outlined several types of goiter and gave directions as to the prevention of growth and method of treatment, both medical and surgical. At the close of his highly appreciated talk he gave the opportunity of asking questions. For about an hour the doctor's time was taken in answering the questions which were asked.

Lauderdale doctors will meet at Ripley on May 5. Several prominent medical men of West Tennessee will read papers. The local health unit in co-operation with the Rotary Club is planning to hold a crippled children's clinic.

Dr. L. L. Gale, of the Lewis-Gale Hospital of Roanoke, Virginia, was the chief speaker at the Sullivan, Johnson and Carter Medical Society on April 1. Dr. Gale's subject was "The Treatment of Acute Pleural Empyema." One or two other scientific papers were read by members of the society.

NEWS NOTES AND COMMENT

The Crossville Chronicle of March 31 reports that the health unit there will be supported by the State to the extent of \$1,300, by the Red Cross to the extent of \$400, while the county will make up the balance of \$900.

The Rhea County Health Campaign closed with a mass-meeting which was addressed by Col. D. C. Chapman, of Knoxville; Congressman McReynolds; E. L. Bishop, of Nashville; Dr. H. A. Morgan, of the University of Tennessee, and B. S. Barfield, sanitary officer of Hamilton County.

The Marsh Clinic and Hospital at Kingsport admitted patients in April, though the formal opening of the hospital will be at a later date. The hospital has a capacity of twenty-five beds and will employ about fifteen nurses. Dr. Marsh will operate the hospital as a private, non-profit-making institution. All moneys over and above expenses will go to charity.

Bradley County has voted a full-time health unit to begin July 1 under the joint supervision of the state and county boards of health. The personnel of the unit will be two full-time physicians, one full-time nurse and a stenographer. A budget of \$9,000 was voted.

Dr. Roger H. Burrus, Vanderbilt, 1926, has been appointed resident physician at the Nashville General Hospital. The appointment takes effect July 1. Dr. Burrus succeeds Dr. Theodore Davis, who has been resident surgeon of the General Hospital since last July.

Dr. O. F. Agee has been appointed to succeed Dr. Collins as physician with the Dyer County Health Unit. Dr. Agee went to Dyersburg from Weakley County, while Dr. Collins goes to serve with the Roane County Health Unit.

Jackson is starting a war on the mosquito. Due to the heavy rains of the early spring it is feared large numbers of mosquitoes will be visitors in the city during the summer, so Commissioner Johnson is advising the people of the town to get rid of all mosquito breeding places.

The American Medical Association says the growing use of cosmetics for women cause them to spend \$117,000,000 per year and points to the fact that a horde of beauty quacks distribute various dangerous poisons each year. To curb this practice the association states that manufacturers of cosmetics should be required to print on the label the ingredients used in the preparation.

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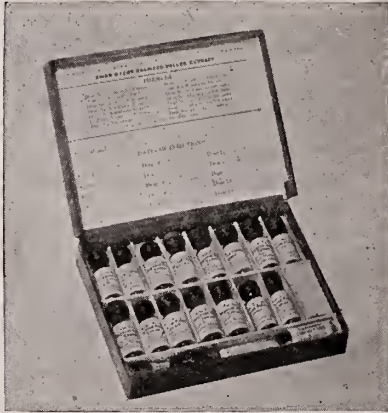
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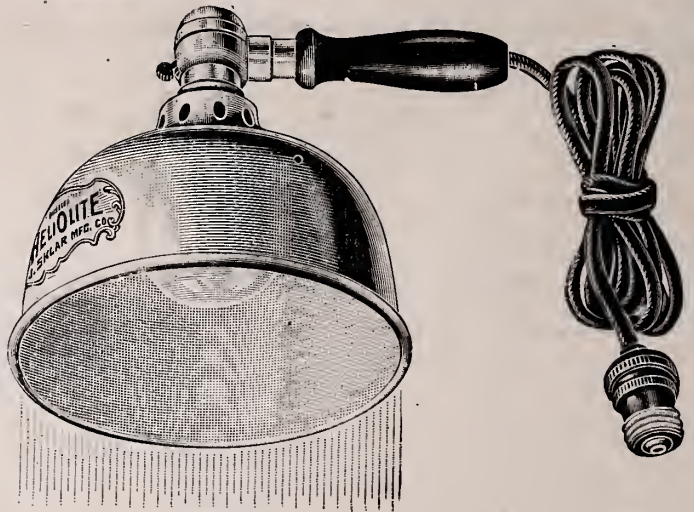
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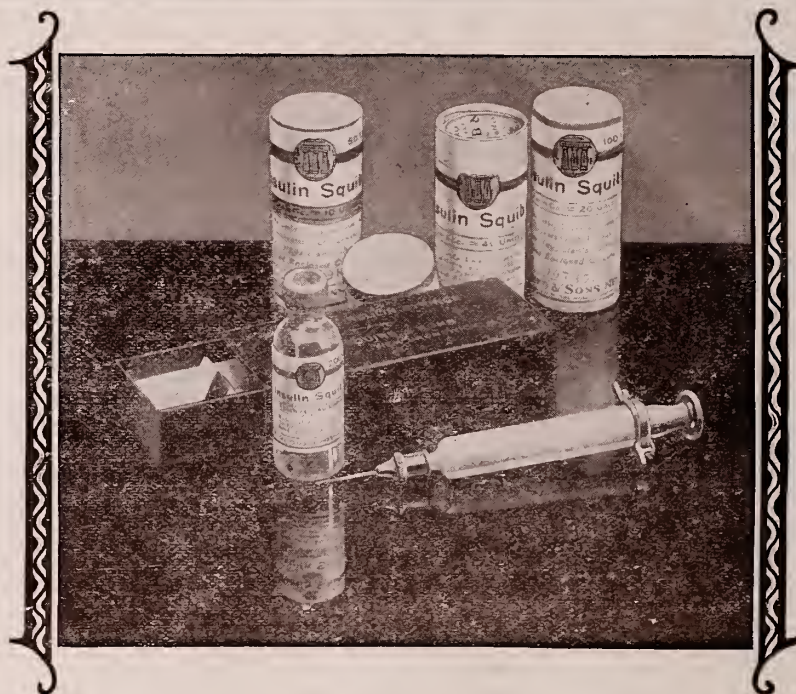
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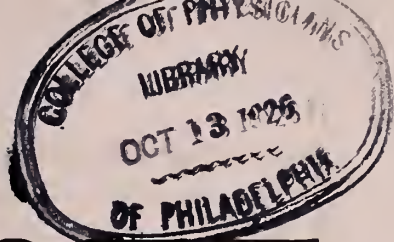
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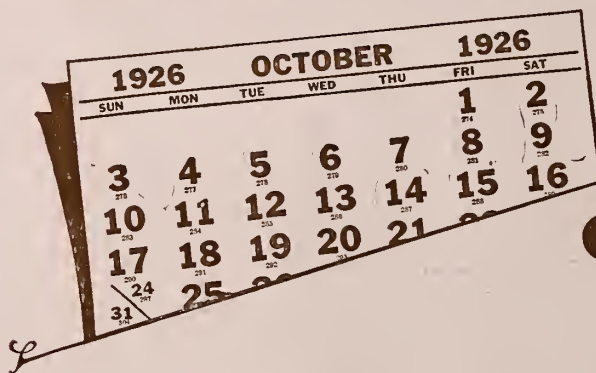
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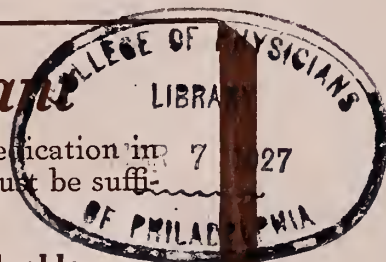
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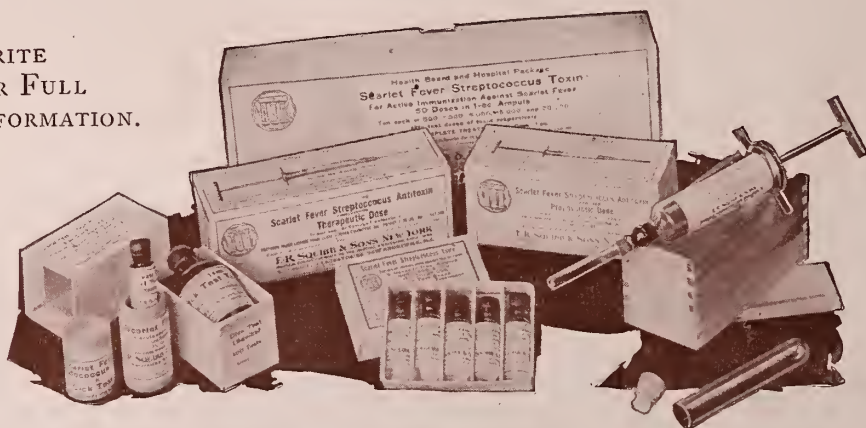
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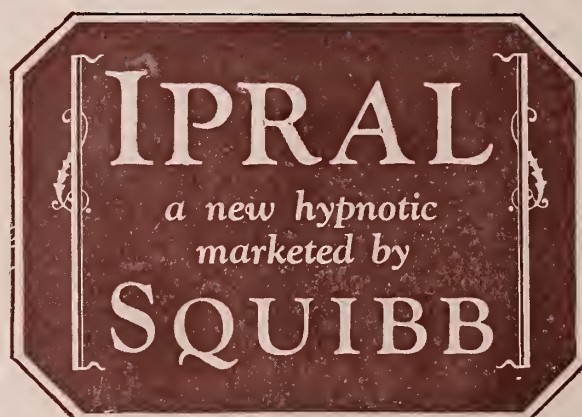
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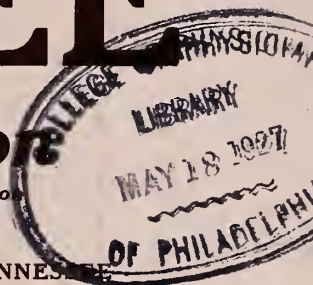
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